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# ComputerWeekly

Thursday, February 4, 1982


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NEWS BRIEF

## Viewdata launch

IBM has launched a viewdata service designed to make its bureau network accessible to small and medium-sized organisations.

Telephone concentrators in the major UK business centres make the bureau widely accessible by local call and the company believes that by offering support for viewdata terminals it will find a large market among companies with salesmen or engineers in the field, dealer networks or distributed sites.

## Challenge to 4321

MINI manufacturer Wang is chipping away at IBM's market with the release of an entry level version of its 32-bit VS "supermini", the VS 100. It is to be known as the VS 90, and is said to give twice the performance of IBM's 4321, at 85% of the price.

## Sperry slump

PROFITS were down 40% at Sperry Corp, Sperry Univac's parent, for the period ended December 31, 1981. Net profit was $47.3 million. Profits for the same quarter of 1980 were $79.4 million. A company spokesman said the recession, combined with a weak dollar, had badly hit the company's trading results, particularly in relation to overseas subsidiaries.

## Banking blueprint

FRANCE's State owned Credit Lyonnais Bank has asked Sligos, a computer services firm in which it has an 80% stake, to produce a blueprint for a terminal network which will enable small firms to consult their cash balances on their own individual screens.

# NAS shows interest in troubled Magnuson

by Boris Sedacca

RENEWED interest in Magnuson, a leading IBM plug-compatible processor manufacturer, is likely to be shown by another PCM, National Advanced Systems, following the collapse of merger talks with Storage Technology.

Magnuson's problems have been compounded by losses of over $10 million on a turnover of under $5 million for the last quarter of 1981, followed by the resignation of Joseph Hitt as president and his replacement by Charles "Chuck" Cole, an academic from the University of Southern California's School of Business faculty, as acting president. Cole has been on the Magnuson board since May 1981.

NAS is keeping its cards close to its chest as far as any possible Magnuson takeover is concerned.

"It does the PCM industry no good when we see a competitor fall by the wayside," said John Clements, managing director of NAS.

"We are always interested in looking at our competitors' customer bases but it is a delicate situation. However, it does not figure in our plans at the moment. We already have a sizeable worldwide customer base in that machine range – in the one million instruction per second class."

*CLEMENTS . . . "No good to see a competitor fall by the wayside."*

Another possibility being discussed in the industry is that Carl Amdahl, one of the founders of Magnuson, may return to the company despite plans to set up, with his father Gene Amdahl, a manufacturing operation in Ireland called Trilogy.

One source commented: "It is up to their bankers now because they owe another $16 million. If I was their banker I would try to force a merger on them. The concept of a plug compatible machine is sound, but if you execute poorly, no matter how sound your plan in theory, it will not work out."

He added that Magnuson's new machine which the company needs to compete with the IBM 4341 was late in coming and unreliable because it had to be rushed through manufacturing before it was ready. "It was a textbook mistake – high overheads and their product was not ready on time so they had poor cash flow.

"NAS had been interested in acquiring Magnuson, so their interest could be renewed," he said.

# Chief's departure may split Zilog

by Claire Gooding

US components and systems manufacturer Zilog may be split by its parent Exxon into separate halves, following the sudden departure of several of its top managers, including president Manuel Fernandez.

Zilog has been ploughing money into research and development rather than profit-making particularly on the systems side which now accounts for half its business.

However, Fernandez denied that he had resigned because Exxon has turned down his 1982 business plan. In a memo released to Zilog employees last Friday, he said he was leaving for an opportunity "too good to let pass" in building his own computer company.

Fernandez will be joined in the new venture by two other top Zilog executives, Wayne Sennett, vice-president of Strategic Planning, and John Banning, manager in the components division.

It was Sennett who suggested that Exxon may be dividing the components and systems division of Zilog into separate companies.

Indications are that the new company, called Cosmos, will not be competing directly with Zilog and may even use its products. There is speculation that Federico Faggin, Zilog's last president who left 14 months ago, may be behind the new enterprise.

Meanwhile Zilog is in the hands of three other top executives, including vice-president Pepe Pledra, Zilog's international division manager based in the UK.

No successor for Fernandez has yet been announced.

# 46 staff shed at Nexos

by Boris Sedacca

TROUBLED office automation company Nexos has made 46 employees redundant following the recent agreement to sell off the marketing rights of its word processor to ICL.

A spokesman for the State-owned British Technology Group which controls Nexos said that the redundancies were an "inevitable consequence of negotiations".

Last Friday, 46 Nexos employees received a letter from the company personnel manager which terminated their employment forthwith.

The redundancies have hit Nexos employees throughout the country, including Nexos offices in Manchester, Birmingham, Thame, Bristol and London. They are mainly in marketing and sales positions, although some [illegible] and accounting jobs may [illegible] been affected, according to a BTG spokesman.

*HOOTON . . . Resigned as [illegible] and marketing director.*

Many of the 130 remaining employers are service, engineering, BTG says most are likely to retain their jobs.

Nexos sales and marketing director Peter Hooton has resigned by mutual agreement with the company. Hooton had recently joined Nexos after 20 years with IBM where he was responsible for marketing and business planning.

# Dollar boost for ICL

● From front page

pressed cautious optimism on the progress being made towards profitability at ICL's annual meeting earlier this week.

The American order comes on top of the 50% increase in sales achieved there in 1981, and the European and UK deals will be particularly welcomed as sales dropped by £29 million in these areas combined last year.

In a new move, the company is widely expected to announce a new model in the ME29 range, the ME29 model 55. It will have more main store capacity, better networking capability and will have IBM-compatible software allowing the machine to be used in Systems Network Architecture (SNA) networks.

The complete package will be on the market in October.

The price of the ageing System 10 is understood to have been reduced by 30% recently as an indication that the range is nearing the end of its life.


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## Portable debugging

● From front page

witt, marketing manager for Micro Focus, "and we always are."

The facilities provided by Animator are invaluable in testing and debugging, which Micro Focus estimates to be responsible for 67% of programming effort at present.

Assembler and Basic programmers have always had the perks that come with an interactive language. They are able to make changes and run the program immediately, with control breaks to examine values along the route.

With a high-level language like Cobol, however, there are tedious steps to be followed in the creation of test data, test running and verification, often themselves involving a great deal of programming time.

Micro Focus is providing a high-level "harness" for such jobs. Program creation and maintenance tools are not themselves new, but the difference in these is that they are portable.

The breakthrough that Micro Focus has made is that all their tools are portable. To write a high level systems tool in Cobol rather than assembly code preserves the portability which made CIS Cobol popular in the first place.

Both Animator and Slideshow have been written with ease of use, as top priority, and are likely to reach beyond the micro market into large mainframe installations.


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# Computer Weekly

Thursday, February 11, 1982 Number 795 30p


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# Users win big cut in IBM software fees

by Maggie McLening

NAGGING from users has finally made IBM change the way it charges for licensed software products and program maintenance. As a result big savings could be in store for large mainframe installations with multiple sites, a welcome relief to the generally upward trend of software prices.

A new scheme extends IBM's Distributed Systems Licence Option (DSLO) from software on the 8100 and Systems 3, 34, and 38 to VM, VSE, and MVS licensed program products. The effect is to limit IBM's contact to one central location for each of its customers, and allow the user to co-ordinate the maintenance of his own software.

This means he pays IBM a reduced licence and maintenance fee for any program updates.

"We worked on IBM rather like a dripping tap," said George Goodwin, information systems manager of Wavin Plastics and spokesman for the IBM Users Group. "When IBM charged an all-inclusive price for software, prices went up frequently because of the maintenance costs. This is a sensible strategy; someone like ICI with lots of subsidiaries may not want maintenance on every site, and under this system they will get a reduction of fees."

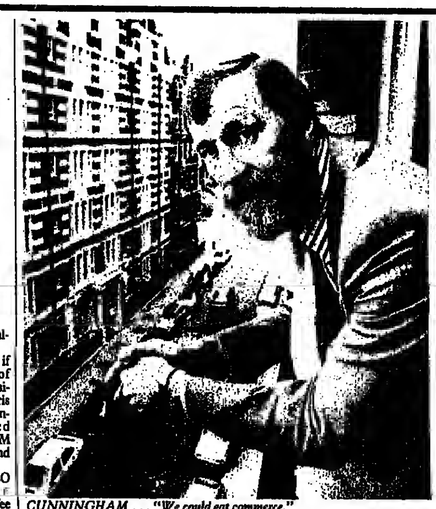
IBM's maintenance costs are cut because of the reduction in the number of systems programmers needed for customer support. The new scheme puts responsibility for copying and distribution of programs on to the user. Service updates and documentation will also be supplied to only one installation.

"A lot of customers felt that if they had multiple copies of programs they were being excessively penalised," confirmed Maris Rolmanis, systems support manager of National Advanced Systems, supplier of IBM program-compatible systems and software.

Under the extended DSLO scheme, IBM offers customers a 25% reduction in the licence fee for second and subsequent copies of a licensed program, and will deliver one copy only of the program, service updates and licensed documentation to a single location.

A further change to the pricing structure for maintenance of software will benefit customers running the same software component on more than one processor. If the customer is prepared to accept IBM customer engineering support to a single machine location, a maximum of 160% of the base local program support agreements fee will be charged to cover any number of machines running the same software.

*GOODWIN . . . Dripping tap forced IBM to change software charges.*



*CUNNINGHAM . . . "We could eat commerce."*

# Councils urged to sell micro software

by Claire Gooding

LOCAL councils are being urged by computer advisers to sell their home-produced microcomputer software to other users.

The Local Authorities Management Services and Computer Committee (Lamsac) is recommending that a publishing house for microcomputer software packages written by local councils be set up to sell them to other councils and even to users outside.

Lamsac's proposal comes in a report which completes the last phase of a long enquiry into the impact of microcomputers in local government. The main concern is to make the most of existing facilities, so that the £22,000 million local government will be spending this year will be used effectively.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Over 200 mainframes and more than 2,000 microcomputers are in use in local government, says Lamsac. The committee is funded half by local authorities and half by central government, and provides paid consultancy to councils which call on it and also funds research.

"A co-ordinated approach to the use of information technology through the use of microcomputing will produce an increase in the efficiency of local government," says the report.

Lamsac recognises that microcomputers have boosted the demand for applications and goes on to recommend that co-ordination of buying power, facilities and existing resources should take place as soon as possible, across mainframe and microcomputer fields.

As well as many routine local authority applications already implemented in a variety of ways on different mainframes, Lamsac cites another 2,500 potential new applications which are made possible by the advent of microcomputers.

"It makes sound common sense to co-operate," said Roy Barnes, Lamsac director. "There are over 3,300 different applications on all sorts of mainframes and other

● Turn to back page

NEWS BRIEF

## Rate support 'time' cost govt £240,000

THE estimated cost of computer time (usage and storage) incurred by the Department of the Environment in preparing the 1982/83 rate support grant settlement was estimated to be £241,744 up to the end of December.

More than £1,000 represented expenditure on the department's own computer facilities, Tom King, Secretary of State for the Environment, told MPs in a written Commons answer.

## Viewdata boost

IBM has made another move into viewdata by announcing last week that its UK bureau services will be accessible from viewdata terminals. The bureau's processing costs have long been acceptable for a wide range of business applications, according to the company, and low cheap terminals which can be used for several separate services will remove the last barrier to a vast market amongst retailers and other small businesses.

(See page 3.)

## Logabax deal

LOGABAX UK has signed an agreement to market Systime's Series 500 microcomputer. The deal will make Logabax one of the major distributors of the Intel 8086 system released by Systime last year.

## Computastars

THIS year's sports competition for computer users and the computer industry is under way, with the announcement of the 1982 Computastars. Four regional heats, a national final and a European final are included in a programme sponsored as usual by Computer Weekly. Entry details, page 16.

# IT must depend on private enterprise, says Minister

by Robert Parry

CALLS for a Japanese-style approach to information technology have been rebuffed by IT Minister Kenneth Baker, who insists that private industry must make the UK a world competitor.

Citing a UK trade deficit of £230 million in information technology for 1980, Baker has told the National Economic Development Council that by 1990 the figure could reach £1,000 million. Most of the imbalance comes from trade with the US and Japan, but it is up to private enterprise to combat it.

The government's roles should be "essentially catalytic", and it should set up the infrastructure and domestic environment in which the IT industries can achieve growth", the Minister said. But he called on managers in the investment and procurement area to "take investment and procurement decisions with the long-term objectives of the UK industry in mind."

UK companies held only 1.5 per cent of the world's information technology market excluding Britain, and until this country pursues business on an international scale it will be unable to compete.

His uncompromising message came in a written reply to NEDC last week following the report from its Electronics Economic Development Committee.

The report was written last October by its chairman, Sir Henry Chilver, who demanded a concerted approach by the UK government and industry to promote information technology.

Baker criticised the paper for seeking government initiatives without recommending action from industry. "If the aim of increased international competitiveness is to be achieved, it is vital that the role of industry and the finance sector should be fully understood and accepted. The involvement of government should not be allowed to mask the need for initiatives from the private sector."

The NEDC paper proposed that public sector resources should be concentrated on companies best placed to build internationally competitive positions.

Baker replied that selectivity was already a feature of the government's approach.

*CHILVER . . . Call for concerted approach.*


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# DP managers further ahead in pay stakes

by David Craver

SENIOR data processing managers are winning the biggest percentage of salary increases among computer staff, according to the latest pay survey.*

"DP department heads are suddenly getting a lot more than the people they are managing, and this has happened in the last year," says Lawrence Lock, managing director of Management Personnel, the company responsible for the survey.

The rate of increases for senior management categories, which comprise management services, data processing, systems and programming managers, as well as project leaders, has not only been above the rate of inflation, but has widened the differentials over their staff, Lock says.

The survey covers 50 industrial and commercial companies in the South-eastern Home counties, but none in central London.

Median salary of management services managers jumped 33% to £14,000 annually over a 15-month period ending in November 1981. DP managers' pay climbed 28% to £12,750, systems and programming managers' pay was 29% up at £12,000. Project leaders had a 28% rise to £11,000 over the same period.

With the exception of systems programmers, whose salaries soared 58% to £11,025 in the period, all the other "indians" had much smaller percentage increases than the chiefs," Lock says.

He also thinks the figures for systems programmers may be distorted, although he agrees they are in high demand.

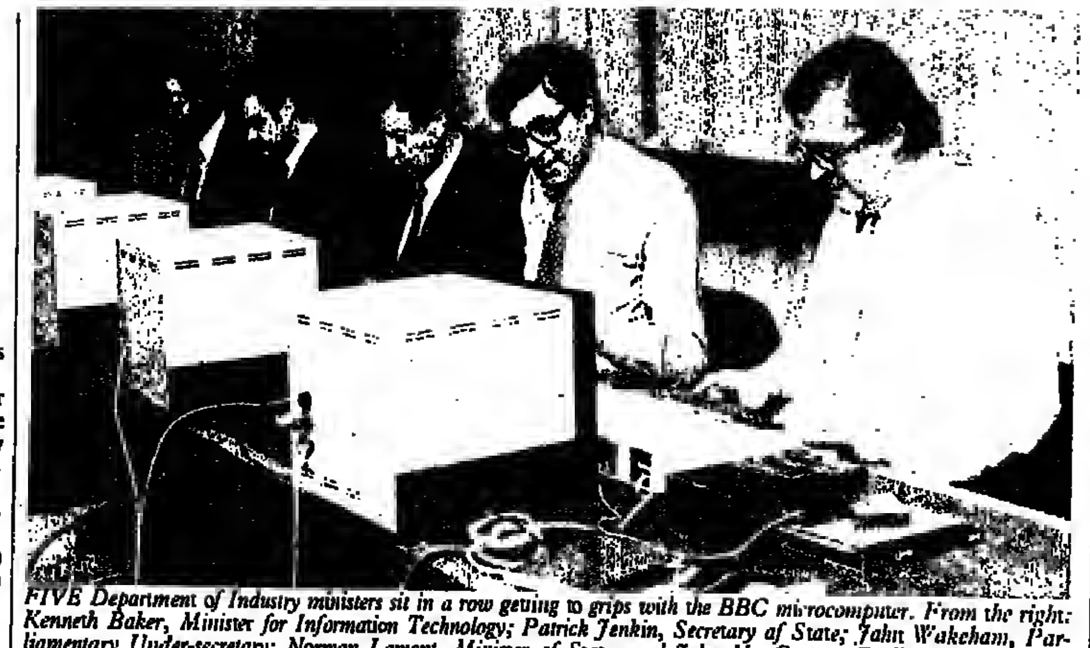
Other salaries at November 1981, with the 15-month percentage increase in brackets are: Senior systems analyst £10,000 (18%); systems analyst £7,800 (10%); analyst/programmer £8,300 (19%); chief programmer £12,134 (21%); senior programmer £9,000 (18%); programmer £7,000 (8%); and trainee programmer £5,000 (14%).

The report also says that 85% of management services managers get a car against 90% 15 months ago, and 36% of DP manager against 41% in the previous survey.

On the operations side the same trend of widening differentials is demonstrated. Operations manager/controllers received a 47% hike in pay to £11,025, while operators had increases ranging from only 5% for senior operators (£6,000) to 25% for shift leaders (£6,600) in the 15-month period. Shift premium is not included.

Data preparation supervisor salaries were up 27% to £6,500, data control supervisors had rises of 32% to £6,420, and data prep and data control ops' pay climbed 48% to £5,328.

* Management Personnel, Salary Survey, Winter 1981, York House, Chertsey Street, Guildford.



*FIVE Department of Industry ministers sit in a row getting to grips with the BBC microcomputer. From the right: Kenneth Baker, Minister for Information Technology; Patrick Jenkin, Secretary of State; John Wakeham, Parliamentary Under-secretary; Norman Lamont, Minister of State; and John MacGregor, Parliamentary Under-secretary.*

# Viewdata campaign aims at business market this year

by Dooald Kennett

INTER-COMPANY communication has been singled out as a key growth area for viewdata this year, while mass-market penetration will be tackled in a longer-term campaign aiming to achieve significant results by the end of 1984.

These decisions were made at a meeting last week sponsored by the Department of Industry to boost viewdata (Prestel) and teletext (Ceefax and Oracle). It was a repeat of last year's campaign, which was claimed to have got teletext off the ground, trebling the sales of teletext receivers.

The Association of Viewdata Information Providers was irritated that its representatives were invited to attend, but not to speak at last year's conference. "But we would not argue with the decision to concentrate on teletext," said the Association's deputy chairman Pat Montague. "Teletext has been an immediate benefit to the manufacturers and it is better that one part of the whole should be making a profit," he added.

This year, the initial decisions have included the plan to continue concentrating on the business sector and to begin a longer term strategy leading to a mass market operation by the end of 1984.

Teletext will continue to be promoted this year and October will once again be declared National Teletext Month. Plans for this year include an expansion of experiments in which the BBC and IBA deliver telesoftware to schools via their teletext broadcasts.

Other goals for viewdata this year include promoting the rapid growth of new business applications, working out how to package a viewdata service to make it attractive to consumers.

Viewdata and teletext chip maker Mullard, which is part of Philips, is using viewdata in-house and expects to give all its sales engineers a terminal at home this year for technical information. Managing director Ivor Cohen claims Mullard has 95% of the world market for viewdata and teletext chips. "There is hardly a set in the world in production that doesn't contain chips made in the UK," he said.

British Telecom information services chief Richard Hooper said there were now 16 suppliers of private viewdata systems in the UK and that of the 200 viewdata services installed worldwide 150 were from the British private sector.

*COHEN . . . Mullard's latest viewdata module is only two-thirds of the cost of last year's.*

# CII-HB reports huge loss

by Kevin Cahill

LIKE several other European computer companies reporting annual results this week, French manufacturer CII-Honeywell Bull has pushed up turnover, but at the expense of profit, which collapsed from last year's £16 million to a loss of just under £40 million.

Turnover at CII-HB, in which US-based Honeywell is currently negotiating with the French government for a reduction in its 47% stake, rose 16.6% to £663 million.

The company lays the blame for the sudden and dramatic fall in profit on a sharp increase in financing costs.

The company borrowed heavily to finance the growth in sales. With European interest rates in the high teens all year, this meant that a combination of increased inventories, debtors and an aggressive investment policy left the company saddled with very large debts.

The company blamed the need to borrow on "serious under-capitalisation." In the context of the negotiations between Honeywell and the French government on compensation terms, this is seen as a direct criticism of Honeywell, which it is implied did not invest enough in the company, thereby forcing it to borrow excessively.

The other shareholder in CII-HB, giant industrial conglomerate St Gobain, is already in the final stages of nationalisation, so the criticism becomes less relevant.

The grand total debt on CII-HB's books is now estimated at £415 million, which makes its finances worse than ICL's at the time of ICL's problems last year.

Honeywell itself recently stated that it aimed to reduce its stake in CII-HB to 19% or less.

This would enable Honeywell to avoid showing the CII-HB losses against its already suffering profits.

Given the under-capitalised state of CII-HB, the French government may achieve the reduction of Honeywell's stake by investing more money in CII-HB.

This would dilute Honeywell's share, and possibly avoid having to make any cash payments.

Spokesmen at Honeywell would not comment on the CII-HB figures.

Elsewhere in Europe commentators feel that the final outcome of the negotiations may see the old marketing agreement under which CII-HB was the Honeywell agent in France, Germany and Scandinavia break up, and Honeywell once more undertake its own marketing.

Last year CII-HB employed an additional 1,800 people to bring its total workforce to 21,000.

# Finnish firm wins high sales in Europe

by Kevin Cahill

FINLAND'S leading computer company Nokia Electronics, a division of the Nokia group, has reported a 59% increase in turnover for the year 1981. Turnover of £96.8 million, compared with £60.7 million in 1980, backs the company's recent push into the UK.

Although a large percentage of the growth can be attributed to the inclusion in the figures of the former state-owned Telenokia telecommunications company, the underlying growth in the company has been about 30%, according to vice-president of Nokia Electronics Kurt Wikstedt.

Exports rose by 110% to £27.1 million from £12.7 million. Much of Nokia's exports, perhaps as high as 42%, go to the USSR.

Sales at the Nokia data subsidiary division, which includes the CII-Honeywell Bull agency and a number of service bureaux, rose by £12.9 million to £43.7 million.

Although no profit figures are quoted for the sister division, Mikko computer its sales rose from £11 million to £14.1 million.

This division is spearheading Nokia's drive into Europe and the company has invested £1.5 million in new production facilities for the Mikko.

Later this year Nokia expects to open offices in Switzerland and Holland to complement the drive on European markets which the company launched last year. UK customers include the BBC and British Tissue.

Wikstedt said that he expects Nokia data division to deliver its first Teletext services in Finland later this year, followed by deliveries of the service in other Scandinavian countries towards the end of the year.

*WIKSTEDT . . . large turnover increase for Nokia in 1981.*

# High tech home soon

by Philip Hunter

A SHOW house containing the domestic technology of the future is being built in Milton Keynes as part of the Information Technology Year bonanza.

The house, which will be a standard four-bedroom executive dwelling, will incorporate features of high technology expected to be available in the home by 1987.

It is being developed by the Greenwood Construction company, but technology furnishings are being provided by London-based consultant Butler, Cox and Partners which has done research into home information systems.

"We are still trying to sort out the kind of systems to install," says David Butler, one of the partners of Butler Cox.

The technological development is being considered under seven headings. These are: entertainment, information systems, communications such as voice and intercom, security and alarms, household management such as heating and lighting control, education and the office at home.

"Under this last heading we are studying word processing and banking," says Butler.


**ComputerWeekly** Thursday February 11, 1982 Vol 32 No 795

100,000 circulation – the highest ABC figure of any computer journal in Britain

IPC Electrical-Electronic Press Ltd, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS. Telex: 892084 BISPRS G

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Subscriptions: UK £22, Students £11; US, Canada $93.60, Students $46.80; Europe £39.12, Students £18.56; Middle East, North Africa (airmail) £52.54; North & South America, Southern Africa, South Asia (airmail) £62; Far East, Australia & New Zealand (airmail) £70.84.
Circulation Dept: IPC Business Press (S&D) Ltd, Oakfield House, Perrymount Road, Haywards Heath, Sussex. Tel: 0444 59188.
Publishing Director: Dr J A G Thomas. Editorial Director: Chris Hipwell. Published weekly on Thursday. Registered at the Post Office as a newspaper. ISSN 0010-4787. © IPC Business Press Ltd 1982.




## IBM boosts bureau business in the UK and reopens its US service in the teeth of AT&T

# Viewdata used as bait to attract small firms

by Donald Kennett

VIEWDATA is to be the vehicle which will bring IBM's bureau services to the mass of small businesses in the UK.

Launching the viewdata facility last week, marketing programmes manager Barry Aust said that although costs had been falling by about 25% a year, two factors had prevented data processing services from being more widely used: they were perceived as being so complex as to require specialist skills, and they required prohibitively expensive terminals.

Viewdata terminals are very cheap in data processing terms and the spread of teletext sets is educating the public in the use of computer-type systems, he said. Making the applications on IBM's system appear simple had provided a real challenge for the development team.

IBM's service is a Prestel lookalike, using the same screen layout and keying conventions wherever possible, but it is fully interactive, enabling files to be updated as data is entered. It provides several levels of access control, allowing different users to view different types of information from the same set of files and only allowing some of them to alter it.

It is part of the TBS Terminal Business System running on an IBM 370/168 at the company's Warwick computer centre. TBS is designed to provide normal accounting and business services interactively at pre-set times.

The centre is accessed via a packet switched network with seven nodes from Glasgow to Bristol which also provides access to IBM's other computer centres.

The network is based on System 7 minis, three of which have been upgraded to handle viewdata terminals. The rest of the network is to be expanded to 12 nodes and upgraded to handle viewdata by the end of the year.

Commercial service is due to start on April 1 and until then the company will run trial applications with selected customers.

Five such trials started last month. They include a credit company which is having car dealers call in to check potential purchasers' outstanding balances on their present cars and work out the monthly payments for different deposits and payback periods.

Another pilot user is a supermarket chain whose branches enter goods received and takings daily and the stock position weekly. Another is a financial company which has more than 3,000 overseas contacts.

IBM plans no involvement with the supply of terminals, except to inform customers of the range of features available. Pilot customers are using terminals from a variety of suppliers, but all have chosen colour sets and full alphanumeric keyboards.

• Simple systems can be got running in three weeks and cost from £2,000 to implement, while complex systems could take four months and cost £50,000. Running costs could range from £15,000 to £50,000 a year for a system with 15 to 30 terminals using it.

# Scene is set for a battle of giants

by Howard Karten

A RETURN TO remote computing services with an emphasis on coast to coast networking facilities has been announced by IBM in the US.

The move is likely to bring the computer giant into immediate confrontation with American Telephone and Telegraph, which has given the go-ahead to its Advanced Communications Service, the packet switched network it first talked about some years ago.

IBM has run a bureau service in the UK since early in the Seventies, but in the US it was forced to sell its business in 1973 to Control Data in settlement of an antitrust suit.

By re-entering the field, which the court decree prevented it from doing until 1979, IBM is pitting itself against US industry leaders Control Data, Geisco, McDonnell-Douglas Automation, Tymshare, and National CSS.

The US remote computing service market was some $4 billion last year, and is expected to grow at 15% to 20% annually, according to industry estimates.

There will be no immediate effect on IBM's UK bureau service, although it does raise the possibility that the UK service could be linked to the US network. Called the IBM Information Network, the US service is not a bureau, but a data processing and network facility for customers to perform their own tasks at remote terminals.

The information network gives access to IBM program products and productivity tools, a service akin to the VM Service Productivity Service which is available from the UK IBM bureau.

AT&T's ACS is expected to start later this year. While ACS will probably move towards adding more processing power, IBM is likely to add more communications processors to its network.

Washington-based ADAPSO – the Association of Data Processing Service Organisations – said it might oppose IBM's plans if it appeared that IBM was unfairly subsidising the new service.

IBM's network for the new service consists of several 3000 series processors.

# Still longer wait for BBC micro

by Robert Parry

THE sorry tale of the Acorn/BBC microcomputer continues with more confusion over when the 12,000 outstanding orders will be fulfilled.

The first television programme in the series that the British-built machine is designed to complement was shown a month ago, and Acorn managing director Chris Curry expected then that all the orders would be met in March. He is sticking to this, but the company handling the orders, BL Marketing of Kettering, is telling people not to expect delivery before April.

The BBC puts this down to caution on BL Marketing's part, adding that everyone was working to the same delivery dates, but interpreting them slightly differently. This extends to expected delivery dates for machines ordered once full production is achieved.

Curry says the lead time will then be about three weeks. BBC Enterprises is less precise, preferring to wait and see what happens when full production rates actually arrive.

*HUNT . . . the software market is booming at both ends.*

# MSA flying high with profits 40% up on 1980

by Claire Gooding

ONE of the largest software suppliers in the world, Management Science America, has announced results which top 1980's figures by over 40%.

MSA is still on the acquisition trail, and has just bought manufacturing software specialist Arista, as part of a campaign to broaden its interests.

There are still rich pickings to be had in the IBM software market, as supported by vice-president Michael Hunt's report of a worldwide turnover of $73,139,000 and a profit of $5,487,000 after tax, compared with $53,724,000 and $2,912,000 last year.

MSA itself has spent a lot of its income from the share issue on broadening its product line, spreading from its traditional role of selling financial software into areas such as microsoftware. Peachtree, acquired by MSA last July, which supplies similar software for microcomputers, turned out to be a good investment when IBM picked its applications for use on the IBM Personal Computer.

Arista was attractive to MSA because of its solid IBM experience in manufacturing. The company is based in Winston, N. Carolina, within reach of MSA, and employs about 80 people. It specialises in such applications as manufacturing, control, material requirements planning, inventory control, forecasting and capacity planning.

The area is a new one to MSA, but as Hunt pointed out, an important factor of the purchase is his company's wide distribution network.

MSA's recent growth has been carefully planned, and Hunt believes that MSA is not in danger of having its own products in competition with one another. Although the microsoftware provides a relatively small revenue at present, Hunt expects it to bring in a quarter of MSA's income by 1986.

MSA is geared up for the new SSX operating system offered by IBM with the cheap 4321, a "cut-down" of the 4331, and deliveries are planned for this March.


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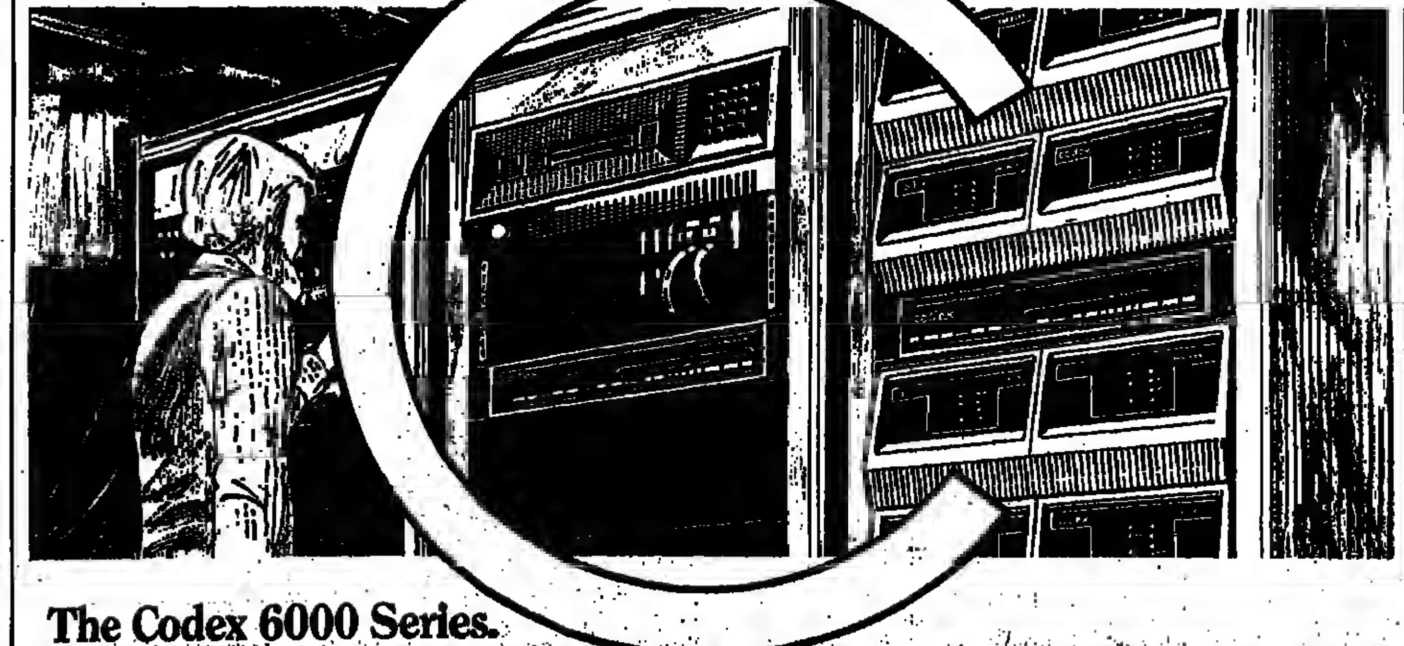

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# Shopping by micro on cards

by Donald Kennett

A SERVICE which would enable microcomputer users to log on and order brand-name consumer goods from the cheapest source, irrespective of which country they are sold in, is Walter Forbes' target for his US-based company Comp-U-Card.

Forbes admits that this is some way down the line, but he is lining up companies to operate the service in the UK, Germany and France and has already licensed Japan's tenth largest retailer, UNY Company.

In the US, the service has been available for the last three months to the 50,000 microcomputer users that access the Dow Jones, Compuserve and Readers Digest's Source Information services and Forbes is working on deals with cable television companies experimenting with two-way cable based services.

Comp-U-Card's service is based on a database of comparative price information which it has made available to subscribers since 1973 through telephone sales staff. Initially computers were only used in the service to compile the books that sales staff used, but three years ago the staff were equipped with terminals online to the database.

This enables them to supply information on 30,000 products to over two million subscribers.

Variations on the service include Comp-U-Claim, which is designed to make information on the cheapest sources of replacement goods available to insurance claims.

# Burroughs sells first advanced office systems

by David Craver

AS a clearer view of Burroughs' strategy in office automation begins to emerge, a firm of unnamed London solicitors is set to be the first company in the UK to install a complete version of Burroughs coontent addressable Office Information System (OFIS).

With chairman Michael Blumenthal going on record as saying half of Burroughs' revenues will come from office automation by the end of the decade, there seems to be some "method in the madness" of Burroughs' takeover of ailing Memorex.

The heart of OFIS is a content addressable electronic filing cabinet. The future of that device, which is compatible with the computer systems of Burroughs' major competitors, could be enhanced greatly both by Memorex's expertise in disc technology and its distribution channels with access to IBM and plug compatible installations.

The firm of London solicitors whose name has not been revealed while final details of cootract are completed, is ordering between £3 and £4 million worth of equipment to include some 100 secretarial word processors, 50 enquiry terminals, and 50 managerial workstations.

OFIS product manager Ian Murdoch predicts that 30 to 40 complete systems will be installed in the UK this year, but many additional orders are expected for elements of the system. These include word processors, an optical character recognitioo page reader, professionals' terminals, workstations, communications processors, and the OFISfile or electronic filing cabinet.

That users do not have to buy the whole package, but can buy components of the system, is crucial to Burroughs' attempt to reestablish its once premier position in the office automatioo market. Pilkington Glass in Laocashire is the first UK company to install the standalone OFISfile, which will be linked to Wordplex terminals. The Swiss Banking System will also install OFIS and ICI, whose Canadian subsidiary was one of the pilot sites, is looking closely at the product.

Murdoch claims that OFISfile gives a "totally oew domension to filing," putting access to computer databases in the hands of end users rather than data processing managers.

Burroughs says there has been extraordinary interest in the product, and the UK police at the Police National Computer Authorities Centre is aoother possible customer. Authorities have said that OFISfile 1, which can store 160 Mbytes or 80,000 A4 pages of data, could handle all but a small percentage of police investigations.

Some secrecy bas surrounded OFISfile, and what separates it from the more expensive and generally mainframe-based content addressable devices from ICL, IBM, and Datapoint. While the actual algorithms used io the software remain proprietary, it is a combination of inverted filing and extreme data compression techniques which cut down the usual overheads oeeded in data storage.

Cost of 160 Mbyte file cabinet is some £40,000, and it can be honked to any of Burroughs' range of communicatlons controllers costing from £9,000.

Bigger versions of the content addressable file cabinet are on the way, and Murdoch says a two gigabyte system will be available next year. He also said that Burroughs' local area network strategy would be announced by the end of this year, and it would conform to whotever standartls had heen accepted internatinnally.

Other OFIS products will integratc voice and video transmissions, and digital facsimile will bc iinked directly into the system by the beginning of 1983.

*MURDOCH . . . Burroughs "new dimension to filing."*

# '26-hour week in the year 2000'

by David Craver

UNION pressure is mounting for the government and other major employers to sign agreements on the introduction of new technology, with the Civil Service unions and the Banking and Financial Union at the forefront of the battle.

But Terry Duffy, president of the Amalgamated Union of Engineering Workers, has again made clear that it is not the technology, but the way it is implemented, that is causing the unions concern.

"Resistance to the introduction of new technology will damage our opportunity to create wealth that is needed to improve society", Duffy writes in Inbucon's survey on the use of robots in UK industry (see right).

In a call for trade unions to become more multi-national as a means of co-ordinating action, Duffy suggests that the working week could be reduced 10% every five years. That would bring a 26-hour, four-day week by the year 2000.

Reduction in the working week is at the heart of the campaigns by the Civil Service unions and BIFU, who fear the rapid disappearance of jobs as the banks and government increasingly computerise their operations. Cabinet discussions have been going on for some weeks over an agreement with the Civil Service, and the banking unions are stepping up their pressure as the annual pay claim falls due.

The union approach, says Duffy should be to beef up research departments to assess the effect of technological change, so that the facts can be presented in a professional way over the bargaining table. On top of that there should be a concerted effort to build new training facilities.

"Robots are here to stay. We must ensure that they are used to the benefit of mankind in general," he states.

*Robots have generally replaced unpleasant or dangerous jobs — where union agreement has not been difficult.*

# Unions back new technology

by Boris Sedacca

THERE has been no strong union opposition to the introduction of robots into UK plants, according to a report* published last week by management consultants Inbucon.

"In general, the industrial unions have endorsed the use of new technology as a necessary means of sustaining industrial output and competing effectively with overseas producers," says the report.

"A key feature of the unions' response has been the negotiation of new technology agreements. White collar workers have felt the greatest impact, particularly in the insurance and banking sectors, and unions such as ASTMS, APEX and TASS have been prominent in negotiating such agreements."

The report adds that as the introduction of technological change has become a feature of collective bargaining, different unions have adopted different policies.

"ASTMS has been keen to secure early consultation and to participate in the early decisions on technology, whereas APEX has looked more to regulating the technical implementation and safety provisions of new equipment."

In negotiating the introduction of new technology, says the report, the main issues have been limited redundancy, consultation and participation, no down-grading of jobs, regulating operating practices and safeguards, ensuring health and safety, and provision of retraining.

The report quotes an example from an EETPU working party in November 1979: "The advice of the National Industrial Committee for Engineering is to face up to the challenge of new electronic technology with confidence — get the additional training and take control of all the work available."

The report points out that many of the jobs so far replaced have been of an unpleasant or hazardous nature, such as arc welding, paint spraying, die casting and injection moulding.

"In these cases, agreement with unions has not been difficult to obtain, provided other suitable jobs were available. In other cases, where the tasks are not necessarily hazardous, highly repetitive work is generally involved with little or no element of judgement or control. Robots are not yet equipped with the sensory perception of a human operator and are capable of undertaking only relatively unskilled jobs."

*"Industrial robots in Japan, USA and UK", Inbucon Management Consultants, 72/80 High Street, Esher, Surrey. Tel. 0372 67041. £80.

# Software deals signed

THE UK microcomputer arm of Systematics International Group is widening the market for its software products by signing agreements with Rank Xerox and Philips Business Systems. Until now it has concentrated on the Apple, because of its extensive dealer network, selling financial and administration packages at £250 each under the UK policy of low-price high-volume sales.

Now its software packages will be available on the Xerox 820 microcomputer and the Philips P2000 range, to be marketed shortly by Philips itself.

2,000 packages are scheduled for distribution in the first quarter of this year. In addition, Currys chain of Micro-C stores is to sell SIM products for the Apple, and Bean Business Centre, part of the Unilever Group, will stock the software packages in its 10 business centres.

# Widening the Ring

by Donald Kennett

CAMBRIDGE Ring builder Toltec Computer has added interfaces for S100-bus micros and Data General minis to the range available for its local area network. Currently available interfaces include versions for Digital Equipment and Computer Automation machines and an IEEE 488 bus version.

Toltec is now working on versions for Intel's Multibus and Motorola's Versabus, as well as software drivers to link the attached processors to the Ring's BSP byte-stream protocol.

Software for the S100-bus systems will run under CP/M, while software for DEC machines is already available to run under the RT-11, RSX-11 and VMS operating systems.

# SALES BRI

## DEC wins Barclays comms dea

DEC has pulled off a contract which will complete latest phase of Barclays Banks. The ordered four PDP-11s branch controllers in communicatioos project which lead to the installation of systems in all its 2,200 branches.

The controllers will handle communications within branch and provide link bank's private telecommunications network.

## £8.3 million or

GEC Telecommunications won £8.3 million worth of for digitsl and analogue ers, de-multiplexers and sion equipment from Telecom. The equipment 140-megabit-per-second which put 1,920 telephone nels oo to a single circuit.

## Exploring

SEISMIC exploration and processing company physical of Woking has Univac 1100/62 multiprocessor system. It will work with Floating Point Systems ray processors on data from exploration vessels and from nil companies. Merlin also develop underground ware to sell packaged with hardware.

## Third upgrade

WOODS Management London has gone to its third upgrade. This time DPS 8/44, due to be September, and it will run VDUs and six disc drives The company switched Honeywell in 1975, when Level 62, and upgraded to 64 in 1978.

## More from NCR

LONDON-based bureau Computer Services has NCR N-8455, which has over applications on two NCR Century 75s that they were run on 100, installed 10 years ago. services include centralised sing of data pre- micro or mini at the site.

## Soroc dropped

SANDY-based Tirector has dropped the US-made range of VDUs and £100,000 OEM agreement Newbury Laboratories made Newbury 8003 VDUs DRE 8840 matrix printers. will be supplied with its Titan multi-processor microcomputer. The company also plans to 150 Newbury 8005 graphics under a second contract.

## Energy system

THE UK Atomic Energy Authority has ordered a Prime Series 11 to perform simulations natural oil reservoirs, rates of flow and pressures of water and gas. The system will the Fores simulation software veloped by UKAEA for Gas, BNOC and the Department of Energy. It will be installed Winfrith and will communicate using Primenet software with other Prime machines doing similar work.

## Initial order

TOWEL teotal company Services has ordered a £160,000 office system from Glasgow's Hewlett-Packard software house. The system is based on an HP3000 Series 44 and includes a general accounting package from Glasgow, as well as HP word processing and business graphics software. It will be linked to Comshare bureau which the company already uses.

# Signs of revival in UK micro chip market

*WEST . . . "Ahead by leaps and bounds."*

by Robert Parry

SIGNS are appearing that the depressed UK microelectronic components market is starting to pick up, particularly at the high technology end.

Despite a slump in sales and profits for Unitech, one of Britain's major distributors of microelectronic products through its subsidiaries Rapid Recall and Celdis, chairman Peter Curry feels the worst may now be over in the UK.

This is echoed by others in the distribution business, who see confidence returning to the market.

Unitech's profit for the half-year to November 28 fell to £1.47 million before tax, a drop of 38% on the correspoodiog period jof the previous year. Sales are 11% down. The group manufactures electronic components aod equipment as well as marketing semiconductor components aod systems in Europe and the UK, but it is felt that the distribution side of the business suffered most, particularly io the German and other Europeao subsidiaries.

John Weatherhead, managing director of Rapid Recall, says that in the computer products side of the business, there is now a substantial pick-up.

Growth had slowed, but bookings went well over the past few mooths aod billings were growiog slowly, he said.

Ray West, Celdis' managing director, is cautious of predicting market improvements, although Celdis' business has moved ahead "by leaps and bounds." He feels tbat the market is less pessimistic, but that the company's good performance is due more to iocreased market peoetration than to an increasing market.

Customers are starting to pull forward schedules aod distributors are having to place orders further ahead to enaure a place in the supply pipeline. "People are making a long-term commitment rather than living from day to day," West says.

Another sign of the market picking up is the lengthenirg of lead times. West estimates that for high techoology products they have increased by two to three weeks over the last month, and if things do improve he foresees a "massive" rate of change.

The mix of products selling well, is also changing. West sees a move to bigger memories in particular.

Bill Carter, a product manager at Thame Components, also notes this trend, adding that 16-bit microprocessors are now beginning to move well.

Thame's level of business is starting to increase slowly after a very flat year or so. Interest from customers is increasing more rapidly. "It's very busy out there, and we have a lot of activity on the phones," says Carter. "We will be back in actioo again in the second balf of the year."

# Rapid Recall bid to 'change thinking' on terminal buying

by David Craver

ONE of the major distributors of components in the UK is breaking into more traditional DP markets with the formatinn of a terminal division.

And by playing on the techniques it has learned in the components business, Rapid Recall hopes to change people's thinkiog about the buying nf terminals.

Rapid Recall likes to regard itself as the Marks and Spencer nf the industrial components distributors, according to managing director John Weathethead. He inteods to sell terminals with the same level of support and service that is demanded in the components industry.

Until now, he asserts, most terminals have been sold by entrepreneurs with a "get the cash and run" attitude.

Rapid Recall already supplies Digital Equipment terminals in large quantities and in the next two years Weatherhead expects turnover from the new division, called Rapid Terminals, to be over £2 million annually.

Total sales of High Wycombe-based Rapid Recall are running at over £10 million for the year ending in May 1982, most of that coming from microprocessor products. Last year's turnover was some £8 million, so growth has nnt beeo at the 50% rate Weatherhead says he has been used to since the company was formed seven years ago.

"The recession really knocked us back," Weatherhead claims, but he looks for better results in 1982, with salcs of about £16 million.

Terminal sales now are about 200 units a month.

Later this month DEC will name a number of authorised distributars far its terminal systems, and Rapid Recall is expected to be among them. It fits intn DEC's corporate strategy of oppointing authorised distributors across its product range.

"The distributor is coming of age in the high technology area," says DEC's Edgar Valentine, UK marketing manager of microproducts and terminals. Rapid Recall was named last April as the sole UK distributor of DEC microcomputer products.

The other authorised terminal distributors which DEC is expected to name include Zygal, Bytech, MBS Rentals, and Abacus. Some eight commercial OEMs have been appointed by DEC over the past year.

The role of the distributor in the sale of computer systems will focus the user's attentioo on the selling of the features of equipment rather than the "bits and bytes", Valentine suggests.

Rapid Recall plans to sign up three terminal distribution arrangements with other major manufacturers over the next six to nine months. And continuing the move into mainstream data processing, Westherhead says plans are afoot to get involved in software and systems products.

*WEATHERHEAD . . . Marks and Spencer of the industrial components distributors.*

# French govt cash aid for Intertechnique

by Jack Gee

FRENCH peripherals company Intertechnique has received a large injectioo of cash from tbe Freoch governmeot, indicating a significant role for it in the couotry's emerging plans for a centrally coordinated computer industry.

Jacques Maillet, president of Intertechnique, said in Paris he was confident that privately-owoed French computer firms still had a bright future in spite of the nationalisatioo of his company's leading competitors.

Maillet reported that the Socialist government has promised that it will not confine orders for computers to State-controlled companies.

Intertechnique chairman said the Minister for Research, Jean-Pierre Chevenement, had signed an automatic office equipment contract with Intertechnique involving investment of 418 million francs (£40 million) between now and 1985.

Maillet added that 250 million francs (£25 million) will be devoted to research. The government will pump in 85 million francs (£8.5 million) of which 61 millioo fraocs will be subsidies and 24 million franca a 15-year loan.

In return Intertechnique undertakes to increase its turnover by an annual average of 40% and increase exports by between 35 and 40% as well as creating new jobs. It will increase its capital by 30 million francs and reinvest each year out of its 1981, 1982 and 1983 profits.

Maillet said this plan had the blessing of all Intertechnique partners, including himself (with a 13% stake) Marcel Dassault Aircraft Corp (31%) and the Rivaud banking group (18%).

Maillet emphasised that American business methods must be applied. "This is imperative when facing trans-Atlantic competition," he added. "Confronted by tbe nationalisation programme we shall not sacrifice profits to growth. Without good management you are bound to be penalised by market laws sooner or later."

# DP industry slowdown

by Jack Gee

FRANCE'S computer and electronics industry showed slower growth last year — 17% compared with an annual average of 25.6% over the three previous years, industry leader George Boudeville said in Paris last week.

Boudeville, president of the SPER Federation, said turnover increased by 19.1 billion francs (£1.9 billion) in 1981 compared with 16.3 billion francs in 1980.

But he added: "This pause is only relative. Orders for 1981 total 35 billion francs, so 1982 will show a new level of expansion."

Military orders accounted for 64% in 1981, equalling the previous year, including both French and foreign government customers. Foreign orders continue to represent half of turnover produced by the 53,500 workers in the industry.

The workforce has been increasing at an average of 4.2% annually since 1979 with an increase of 7.8% for engineers and executives, 6.2% for technicians and only 1.1% for workmen.

Boudeville said: "Demaod for engineers and executives is so strong that cersain jobs will remain vacant."

# Japan acts on privacy

by Philip Hunter

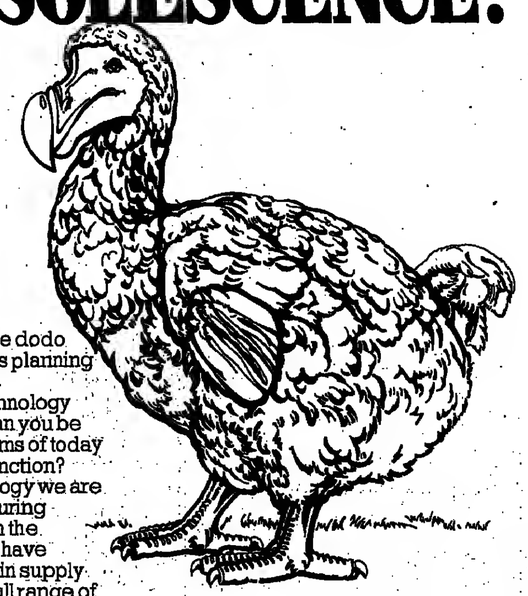
JAPAN is expected to introduce a policy on computer privacy in the spring.

The Japanese government has acknowledged public fear of the invasion of privacy and is committed to implementing guidelines on privacy protection and international transfer of personal data, as drawn up by OECD, Organisation for Economic Co-operation and Development.

About half of the Japanese people questioned in a recent survey answered that they thought their computerised society resulted in excessive quantities of information, and more than half felt that privacy violations were increasing.

● Iceland has also established laws on data protectioo and these, like those of Norway, prohibit the export of private data collected at home.


# EVOLUTION OR OBSOLESCENCE?



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# BT to manufacture City dealer system in its own labs

by Donald Keooett

BRITISH Telecom is bypassing its normal supply channels with a plan to use its own laboratories to manufacture a specialised terminal system for City dealers.

"This doesn't herald a new era of BT producing its own equipment on a large scale," a apokesman said, "although there may be other cases if it is cost-effective and there is no comparable product on the market."

The system, called the City Business System, consists of a rouch-sensitive screen with two telephone handsets for each dealer position, linked to a wall-mounted controller capable of providing up to 500 of them with connections to as many as 1,000 telephone, telex or data network lines.

It is claimed to be the first of its kind in the world and waa developed in-house after deficiencies in existing systema become apparent to BT staff. "It clears a complete deskful of lamps and buttons, is less fault-prone and it cuts masses of wiring down to three pairs between each desk and the ceotral wall-mounted unit," the spokesman said.

By tnuching the cootrol squares oo the screen, the user can make, hold and release telephone calls, receive telexes or access information held on Prestel or other in-house or enternal computer syatema. Using a plug-in type-writer-style keyboard, messages can be cnmposed or ameoded on the screen aod up to 5,000 pages of information can be held is the control unit.

The system will be made at a BT laboratnry in Snuth Londnn and sell st £6,000 per dealer positinn. The first delivery is due in March and BT will show the aystem publicly at Communications 82 in April. It is taking further orders now for delivery in September.

# Universal into Ulster

by Donald Kennett

UNIVERSAL Computers is to sell its Ultimate range of 16-bit minis to Northern Ireland through the Midland Bank subsidiary Northern Computing. And Universal's managing director, Nick Drescher, is lining up manufacturing facilities there for a comprehensive communications interface currently being tested in prototype form in the UK.

Northero Computisg operates a bureau bssed on 16-bit Reality minis from Drescber's former employer CMC, as well as on two Ultimate machines. All their equipment runa the same Pick operating system, written by Dick Pick Associates in the US. Northern will be able to sell its interactive software products to users who have outgrown the bureau service and offer them an alternative source of hardware with locally-based support.

Three machines costing a total of £300,000 have been ordered under the agreement, two from Northern itself, and the companies believe the deal may cover sales of £500,000 a year.

The communications interface will handle viewdata and nther protocols. It will be made in Northern Ireland to take advantage of graots and other facilities made available to attract business.

COYNE . . . Setting new standards in microcomputer software.

# Independent software house strikes it rich

by Claire Gooding

A NEWLY-FORMED iodependent software house in the UK is finding a world market for a range of business software packages which bas already won orders worth £500,000.

The MicroComputer Business, based in Surbiton, Surrey, has already clinched distribution deals with Tandy in the UK, and microsoftware supplier Instant Software in the US, for its first release, a general ledger package.

Sales for the system have taken off so fast that the company is setting up European and US subsidiaries. Tandy is already negotiating for German and Beselux rigbts to the product. The company has re-estimated its sales targets, up from the projected 1,000 aales to 4,500 European sales in the first year.

The reason that Tandy and others are so keen to do buainess with The MicroComputer Business is the amount of effort which has gone into quality control and documentatioo. For £359 ($700) the company is promising to deliver something which is foolproof, easy to use, and sophisticated enough to permit tailoring.

The company is swimming against the tide towards total software portability in that the software has been "moulded" to the Tandy hardware and operating system.

Although this will make the system difficult to implemeot on other syatems, the firm plans to transfer the concept to the Commodore 8096, the IBM Personal Computer and other 16-bit kit.

"Tinkering with the nperations and system software is time consuming," said John Coyne, marketing director of The MicroComputer Business, "but if we didn't do it we'd have a mediocre product – having a message on the screen to tell you to switch on or plug in the printer is something no-one else has troubled tn do."

Coyne and his colleagues, Helmuth Freericks and Phil Kellingly, bave put their individual expertise as well as their own money into the project.

# '$5bn market for 16-bit micros by 1986'

by Andrew Thomas

THE world market for ... super micro systems will ... $5.5 billion by 1986, according ... report published this month.

The report,* from ... based ITOM International, ... fines the super micro as ... purpose computer system ... out-performs a PDP-11/... PDP-11/45.

"Super micros will displace ... general purpose minicomputers ... and dedicated systems in many ... plications," says ITOM president Omri Serlin. "When I ... seven years ago, people laughed ... no one is laughing now."

Serlin says mini manufacturers are already feeling the effect ... super micro. Sperry has ... field, aod NCR and Burroughs ... signing OEM agreements ... super micro auppliers, of ... there are more than 50 in the ... alone. The majority are ... concerns, but IBM, HP, ... Zilog are also involved.

The report confirms that ... number of super micro manufacturers are offering Unix as ... the prime operating system ... an alternative, despite the criticism levelled at it in a survey published last year and reported in Computer Weekly. Serlin says that Unix ... "indifferently documented ... presents cryptic, highly unfriendly user interfaces".

The report predicts that ... of super micros from the US ... go from 20,000 this year to ... in 1986. Over this period, ... worldwide installed base will ... crease to 615,000 units, of which more than 375,000 will be in the US.

*The Super Micro Market, ITOM International, PO Box 1415, Los Altos, California 94022, $995.


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MICRO NEWS — by Robert Parry

# Intel to sample two 16-bit chips 'by July'

IN a bid to maintain a lead in the 16-bit microprocessor market, Intel will be sampling two new 16-bit processors, the iAPX 186 aod 286, in Juoe or July this year, with productioo quantities following early in 1983.

The new devices join a market that is starting to take off as products using 16-bit processors move out of the design phase and into production. Istel's own 8086 is well up there, partly by virtue of having been around for some years, but others, Motorola's 68000 particularly, are rapidly gaining groued, in terms of designs using them if not in numbers of devices shipped.

The 186 is essentially an enhaoced version of tbe 8086, and Intel does not expect existing 8086 users to have much difficulty in sdapting to it.

The 286 is considerably more complex, and includes oo-chip memory management, virtual memory address translation and a multi-level memory protection mechanism. It supports 16 Mbytes of physical memory (compared with the 8086's 1 Mbyte) and a virtual address space of 1 Gigabyte. It is software-compatible with the 8086 and 8088 processors, but runs up to six times faster.

All this takes up space, and there are 130,000 transistors integrated oo to the processor chip, nearly twice as many as on Motorola's 68000 – seen by many as the most exciting of the current crop of 16-bit processors – and over five times as many as on the 8086. (At about $230, it also costs over five times as much as the 8086.)

Some $4 millioo wss spent on developing the iAPX 286 (or 80286 as it is also knowo) according to Intel's microprocessor marketing manager Jeff Miller.

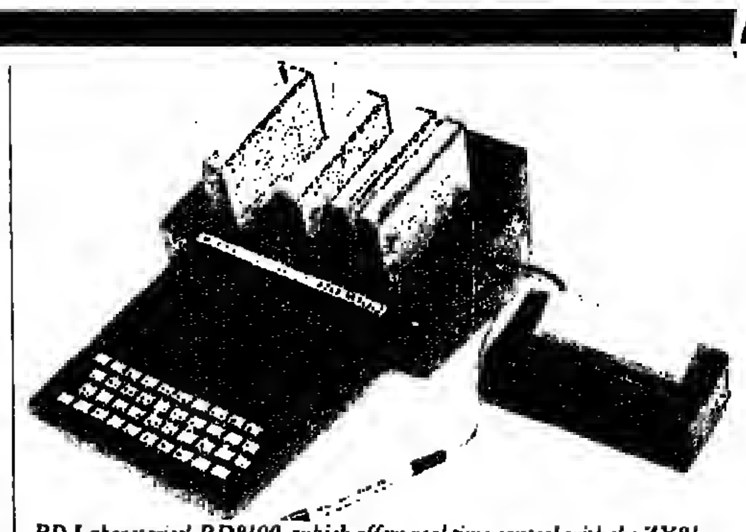
In an unusual move, Intel has announced immediate aecond source liceoces for AMD and Siemens, two of the 8086 alternate sources, in ao effort to tempt potential users and give them confidence to design products using aucb a complex part.

Compatibility with software for existing 8086/8088 products should also ease the path to user acceptance. Code for these can be executed without modification, and will run faster.

The device is aimed at applications needing speed, memory space, and protection. Typically these would include systems for telecommunications, real time process control and office automation. Maoy are likely to be multi-user applications, and the memory protectioo features give hardware-enforced access protection to each user's virtual address space.

Operating system software will become available towards the end of the year, with Intel's iRMX-86. Third party syatems are talked of, with Miller indicating that MP/M or Unix were possibilities.

"The strength of the 80286 is putting functions – as many as possible – on silicon," ssys Miller, adding that it is the first device to be specifically designed for distributed processing, multi-user, multi-tasking systems.



RD Laboratories' RD8100, which offers real time control with the ZX81.

# More than just a game

FOR all those thnusands of ZX81 owners who are looking to do more than play gamsa on their Sinclair machine but are not quite sure what, there comes a range of interfaces from RD Laboratories to connect the micro to the real world.

Modules the size of an audio cassette box plug into a motherboard, Super-mum or Micro-mum depending on capacity, allowing logic or analogue input aod output and, for interactive graphics, use of a light pen.

Possible uses seen by Hertfordshire-based RD Laboratories for the RD8100 system range from displaying multiple process parameters on a mimic diagram to checking out hi-fi equipment, monitoring audio waveforms and producing test signals under software control.

The modules are operated by simple Basic instructions, mainly Peek and Poke, but can be speeded up by using machine code instructions. The motherboard reserves a block of 256 addresses which is then subdivided.

# Defence Dept bans NatSemi

THE US Department of Defence has struck National Semiconductor off the list of approved suppliers of electronic components for military applications.

NatSemi, a major US military supplier, admitted taking short-cuts in the reliability test procedures required for military parts after receiving a subpoena from a Federal Grand Jury in San Francisco investigating the certification and testing of military semiconducting components.

Assurances that NatSemi had corrected its testiog procedures fnr military parts were rejected, and production of about a fifth of its military products will have to be halted.

If systems manufacturers move elsewhere for their components, things will not look healthy for the company.

The market for military devices is one of the sectora in the semiconductor industry not subject to severe price erosion, and is weathering the current recession.

# Micro is immune to office pollution

by Maggie McLeoing

SPECIAL protection against pollution bad to be designed for a microcomputer installed in ooe of the tiny underwriter's workspaces on the floor at Lloyd's of London.

The main problems were a fluctuating power aupply, cigarette smoke and vulnerability to user abuse through having no permanent operator, according to Bob Suttle, marketing director of Task Business Systems, the Dorking-based software house that designed the system.

"We used Mainstay, a standby power system that provides a clean mains supply to get round the power problem and designed an air-filtered ateel cabinet for the computer to avoid exposure to sticky fingera. All of the controls are inside," explained Suttle.

Equipment used is a 6809 processor unit with a 40 Mbyte Winchester disc, five VDUs and a printer, all supplied by South-west Technical Products (Computers) of Peterborough. The operating system is Uniflex, SWTP's derivative of Unix, the portable time sharing system for 16-bit microcomputers.

The applicatioo aoftware was originally developed for Graham Willet, a leading aviation syndicate, and will allow the underwriting business to be expanded without the need for additional floor apace or the recruitment of new staff, according to a spokesman for the company.

Principal functions handled by the computer include the administration of the box, underwriting records, re-insurance and claims processiog.

This is not the first venture into the insurance market for Task Business Systems, which started as Advanced Busioess and Management Services four years ago.

# Rockwell wins CPU contract

US semiconductor manufacturer Rockwell has won the primary contract for the CPU chip in the Panasonic hand-held computer from Matsushita.

Howard Cotterman, devices general manager of Rockwell's electronic devices division, has revealed that 6502 processor chips are being supplied to Matsushita's radio division, which is manufacturing the hand-held computer, the Panasonic Link, in Osaka, Japan.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by Maggie McLeriy

# Comal ready for further inroads into UK market

COMAL 80, the structured Basic teaching language widely used in Scandinavia, has strengthened its foothold in the UK market with the news that Commodore and Gemini Microcomputers are to provide extended versions.

A limited capability implementation of the language is already in use in schools throughout the UK, used on the Commodore Pet and on a Danish microcomputer called the Piccolo. The Irish Department of Education, bowever, has adopted a full version of Comal as the vehicle for its scheme to subsidise microcomputers in secondary education, and it has been supplied direct from Metanic, the Danish developer, for the Apple.

A year ago, Commodore announced that a ROM board was under developroent to extend Comal capabilities on the Pet, as the RAM version currently in use leaves only 5K of usable memory for processing, but since then nothing has been released.

"We are now in the process of purchasing the rights to sell an 8096 soft-loadable version for the Pet," said Rod Wellburn, technical services manager at Commodore. "The problem now is that there is no documentsion, but it will be available to users in about seveo weeks."

The other compsny, Amersham-based systems house Gemini Microcomputers, was set up only a year ago to develop peripheral board products for Nascom computers, which led to the production of its own CPU and the launch of the Gemini Multiboard system on which Comal 80 is now implemented. It has signed an OEM agreement with Metanic.

"Our version will run on either s Nascom II or on the Multiboard at the moment, but we plan to offer it to users of other Z80-based microcomputers later," said John Marshall, managing director of Gemini.

Developed by Borge Christensen and Benedict Loefstedt in Denmark, Comal is s form of Basic which incorporates the type of structures used in Pascal, and is favoured by educationalists becsuse of its informative error messages. It is in use in 90 per cent of Danish schools, and has spread to Holland, Belgium, Germany and the US.

"Some of the trouble in getting it accepted in the UK is becausc articles have been written about it by computer specialists," said Mogens Pelle, of Metanic. "It was, in fact, intended to replace Basic, and it should be teachers that are talking about it."

Pelle added that a Comal compiler would also be available from Metsnic for systems running under CP/M before the end of the year.

Gemini's version runs under RP/M, s specially developed CP/M lcok-alike operating system for the Multiboard computer. It was designed for cassette operation for first-time users who do not want to use discs immediately, but want to develop CP/M compstible software.

The space sbortage problem encountered on the Pet does not spply to the Multiboard because the version of Comal available from Gemini is overlaid, and 32K of memory is left after loading. Apple counteracts the problem by using the Softcard to give Z80 facilities to s 6502 machine.

"There has been discootent with Microsoft Basic for some time," commented Marshall, of Gemini. "Comal offers so many refinements and advantages in operation."

*MARSHALL of Gemini . . . "Comal offers so many refinements."*

# IBM query language goes public

by Claire Gooding

THE relational query language SQL/DS from IBM is about to make its public debut next month, a yeor after its announcement made the whole concept of relational databases respectable.

March will be a critical time in proving bow SQL/DS will stand up to everyday use – particularly in terms of machine performance.

SQL/DS is a structured query language, known within IBM by the friendlier name of Sequel, It was announced as part of IBM's progression towards giving more power to the end user.

It avoids jargon, using English-like syntax sod "joining" files to a series of tables which allow selective queries to be made, almost like a sophisticated text editor.

"We have not reached the point where just anyone can sit down and get out what they want: you do need some training. That will come, but it's not 'Sequel,'" said software marketing manager Jobn Garnett.

At present IBM has SQL/DS in 20 guinea-pig sites world-wide.

*MILK FARMING . . . Alfos hardware was chosen for its robustness.*

# Farmer's friend monitors milk yield

A SYSTEM aimed ot the specialist market of dairy farming is being offered on the Altos microcomputer by Robox, the Glasgow-based systems house, through Logitek, of Chorley, Lancs.

The system is built around a central file of records detailing each cow's lactation history, productivity and feeding details. Historical information is held on a database which is updated regularly to pinpoint any trends or changes that might lead to trouble. This should enable the farmer to monitor the herd and svert potential health or feeding problems.

Facts and figures on milk yields sre also recorded, and instructions on calving intervals, bull fertility and cow conception rate. Farroers can keep weekly herd records with the package, which claims to offer complete dairy management for herds of up to 3,000 animals.

Mansgement reports con be produced for such essential items as veterinary information, selected studies of particular groups uf cattle and their feeding, calving and productivity history. This data can be compared and contrasted to produce a variety of records and analyses.

The package was originally developed by R.J. Systems, o software house based in Ayr, for the Superbrain, and 35 of the systems have been sold through Hitnday Electronics of Newcastle since the beginning of 1981.

"The main problem was that coroputer people know nuthing sbout cows," said Jim Reef, n director of R.J. Systems. "We wrote the package in conjunction with dairy husbandry consultants."

It is now implemented on the Altos ACS 8000-2 microcomputer supplied by Logitek, with 64K of memory, which is sufficient for a herd of up to 1,000.

The total cost of herd- and software would be £5,500 for this size of system, hut a larger configuration would be needed for herds of up to 3,000.

An additional feature of the package is that it will link with other electronic systems on the farm, such as one for feeding.

"It calculates the exact amount for the animals, and the information is passed direct to automatic feeding equipment," explained Reef.

Tlis is the first system that R.J. Systems has tackled in the farming area; until now it has concentrated on domestic retail supplier systems.


# A young scientist takes on the world's most sophisticated data-bank network-and brings the West to the brink of chaos...

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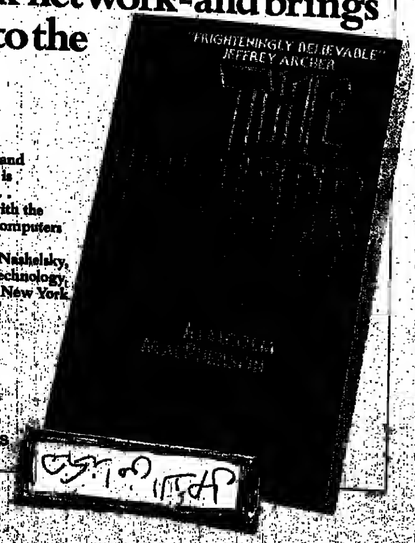


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# ICL joint marketing deal

A TURNKEY stockbroking package for the ICL ME29 minicomputer is to be marketed jointly by Jackson Associates, the London and Chichester based software house, and ICL under the recently announced Counterpoint trading agreement.

Under the agreement, ICL will join forces with software houses to develop application systems for its hardware.

The marketing agreement follows an earlier contract awarded to JA to design and develop the Investmaster investment management and stockbroker administration system for ICL. Trials are now in progress, and the full system should be available in May.

Based on ICL's IDMS database, Investmaster is a system with a dual role: to automate accounting in a stockbroker's office, and to provide up-to-date information on clients for investment and fund managers.

"This is Jackson Associates' first venture into stockbroking," said Robert Hodge, Investmaster project manager at JA. "Our main area of interest until now has been in the commodity broking market."

Three of the packages have already been sold to London stockbrokers by ICL.

**SOFTWARE BRIEF**

## Scheduling saves costs

COMPUTERISED vehicle scheduling offers savings of between 10%-50% on transport costs, according to a report published by the Institute of Grocery Distribution.

Copies may be obtained from the Publications Department, Institute of Grocery Distribution, Grange Lane, Letchmore Heath, Watford WD2 8DQ, price £10.

## Multi-lingual

MULTI-LANGUAGE capabilities for Hewlett-Packard 9835 and 9845 desk-top computers are offered by a Preston development System (PDS) from newly-formed Protek Electronics, specialists in hard and software enhancements for HP systems.

## Tandy edition

TANDY Corp. has issued a book listing application software available for its TRS-80 Models I, II, III, Colour and Pocket microcomputers. The UK version contains over 500 programs written by professionals and amateurs. The Tandy TRS-80 Applications Software Sourcebook is available at over 270 Tandy stores and dealers in the UK, price £3.95.





by Kevin Cahill

*HITT . . . Resigned as president and chairman.*

# A rescue plan for Magnuson

FOLLOWING Magnuson's $10 million loss in its fourth quarter, and the failure of Storage Technology's recent takeover bid, the company is stitching together a new plan to raise cash.

The plan, expected to be presented to investors next week, is being prepared in the sbsence of Joseph L. Hitt, company chairman and president who resigned in the wake of the revelation that the company had made $10 million losses on revenue of $5 million in the fourth quarter of 1981.

Following Hitt's resignation, Charles R. Cole has taken over as president and Paul N. Magnuson has returned as chairman.

The company has laid off 140 people, mostly executive staff.

Company spokesman Bob Stephens said his business plan would be used to raise an undisclosed amount of cash from investors. The company had already received offers of cash, and immediate funds was not the issue. The problem was to get the company's product strategy right.

Magnuson, which employed about 350 people before the redundancies last week had sales for 1981 of $30 million, $2.5 million better than in 1980.

# Telecoms seen as success story of the Eighties

WITH the financial community in the City now taking a more serious interest in the computer and telecommunications industry, studies of this sector are proving popular.

The latest report* is from stockbrokers Capel Cure Myers and its author, analyst John E Clarke, foresees many profitable opportunities for the telecommunications industry in tbe years ahead.

He says that during the 1980s deregulation and technical change will result in s revolution in inter and intra office communicstions as well as main exchange and transmission equipment.

Clarke mentions forecssts of 9% a year growth for the total telecommunications market, with data transmission equipment deliveries growing at 15% per annum in real terms.

Clarke reckons that 2% of world gross product is now telecommunicstions equipment with some developed countries having more than 2% of gross domestic product involved in telecommunications.

He acknowledges that there is no such thing as a telecommunications industry totally free from regulation, but this does not weaken the case for substantial deregulation which he sees as introducing s strong measure of market oriented thinking into what in the UK has previously been an industry dominated by engineers and civil servants from Whitehall.

Even without deregulstion, however, the scale of telecommunications growth in the UK over the next few years can be gauged from British Telecom's investment plans.

In 1977/78 BT invested £845 million in new exchanges and other equipment. By 1980/81 this figure had oearly doubled to £1,550 million and for 1982/83 the target for investment in new equipment is £2,500 million.

The report makes clear that those massive expenditures will remsin firmly under British Telecom's control and GEC, STC and Plessey will remsin the key suppliers into what Clarke describes as one of the world's largest domestic telecommunications industries

> **'The Third World has 70% of the world's population, but only 7% of total world telephones'**

One of the prime cases for deregulation is the stimulus it is expected to give to exports.

In the past 20 years tbe UK's share of the worldwide telecoms market has fallen considerably but Clarke still sees enormous opportunities for exports.

He says that countries with established indigenous industries tend to be nationalistic with regard to the purchase of main exchanges and transmission equipment, and opportunities for exporting TXE or System X exchanges to the US or Europe just do not exist.

The battleground for European, Jspanese and US exporters will be the less developed countries. The Third World has 70% of the world's population, but only 7% of total world telephones.

The prizes are considerable as a country seldom changes the basic framework of the initial system once installed, and there are opportunities for lucrative consultancy, supply and maintenance, and management contracts.

Two key product areas identified as offering special opportunities are the provision of satellite communications systems and undersea cable links.

British Aerospace has recently formed a company called Satcom with French military hardware supplier Matra, which will bid for regional satellite communications contracts.

Looking at transmission equipment, Clarke points out that the UK domestic market for transmission equipment is currently worth about £150 million a year, but can be expected to grow rapidly once installations of digital networks accelerates during the Mid-Eighties.

Clare says the domestic market for modems and multiplexers is likely to experience further rapid growth over the next five years.

It bas been forecast that the market for dats terminals will be five times its present size by 1987.

Clarke says that in all but the very long-term, fears about modems beeoming obsolete are misplaced.

Looking at the market for stachments to the basic network Clarke foresees that the second handset and peripheral equipment market will inevitably be the fastest growing.

He reckons that the three main beneficiaries in terms of basic equipment supply will be GEC, Plessey and TMC (Philips-Pye).

The most far-reaching phase of deregulation is expected to be enacted in July 1983 when BT loses the monopoly right to supply, install and maintain fully digital PABX systems with stored program controls. He sees this product (the digital PABXk), as the key to the so-called office revolution.

There have been widespread complaints about getting BT to install PABX systems all of which are obtained from seven approved suppliers. It is felt that with BT no longer in mnnopoly control of the market, delays in installation and the cost of maintenance will be reduced, the market generally will expand, and BT will be forced to be more competitive.

*Telecommunications in the Eighties and Beyond by John E. Clarke and available from Capel Cure Myers, Bath House, Holborn Viaduct, London EC1A 2EU. Price on application.

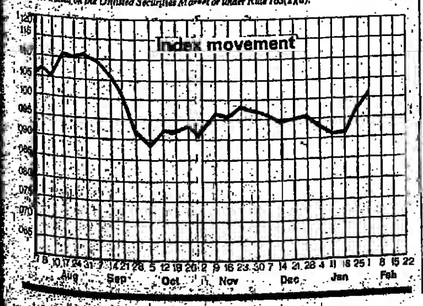
*Satellite communications . . . a key growth area.*

# CW SHARES TABLE

Dec 4/82 — Index: 101.81 — Change +3.95

| Pence High | Pence Low | London Stock Exchange Stock | Pence Price | Pence Chge | $ 1982 High | $ 1982 Low | US Stock | $ Price | $ Chge |
|---|---|---|---|---|---|---|---|---|---|
| 183 | 131 | A Comp Tech. (25p) | 153 | + 8 | 309½ | 191½ | Apple Inc | 293½ | + 15½ |
| 195 | 141 | PDC Int. (25p) | 185 | | 314 | 214 | Auto Data Pro | 293½ | + 2½ |
| 51½ | 29 | E Bev Kent (25p) | 22 | + ½ | 51½ | 31 | Basicsphe | 28½ | + ½ |
| 191 | 141 | Chubb (25p) | 108 | + 3 | 324 | 214 | Commodore | 293½ | + 2½ |
| 48 | 36 | Cole (B.R. Rdsg) | 36 | + 1½ | 68 | 50 | Comp Assn | 72 | |
| 225 | 165 | Comp & Sys. (10p) | 205 | + 15 | 374 | 274 | Comp Sciences | 344 | + 14 |
| 865 | 710 | De La Rue (25p) | 710 | + 20 | 1040 | 774 | Comshare | 94½ | |
| 365 | 263 | Exal (25p) | 263 | + 18 | 440 | 314 | Control Data | 394½ | + 2½ |
| 850 | 695 | Fairey (50p) | 695 | | 1040 | 814 | Cray Research | 1034 | |
| 550 | 347 | GEC (25p) | 547 | + 10 | 814 | 514 | Data General | 74 | + ½ |
| 33 | 23 | GL (10p) | 31 | + 1 | 44 | 27½ | Datapoint | 37½ | + 1½ |
| 41 | 27 | Kleinwort (10p) | 40 | + 2 | 54 | 34½ | Dataproducts | 47½ | + 1½ |
| 282 | 202 | Lucas Ind (50p) | 256 | | 394 | 264 | Digital Equip | 374 | + 2½ |
| 218 | 155 | Morrison (10p) | 208 | + 2 | 294 | 194 | Duplex Bus Sys | 22 | + ½ |
| 110 | 78 | Multitone (50p) | 100 | + 2 | 144 | 94 | Gen Automation | 12 | |
| 282 | 202 | Racal (£1) (80.0p) | 274 | + 4 | 394 | 264 | Honfy | 37½ | + 1½ |
| 231½ | 174 | Trans Tel | 214½ | + 2½ | 324 | 214 | Hewlett-Packard | 304 | + 2½ |
| 273 | 188 | Vinten (25p) | 263 | + 13 | 374 | 254 | Honeywell | 35½ | + 1½ |
| 348 | 248 | Office & Elect (25p) | 310 | + 25 | 444 | 294 | IBM | 414 | + 2½ |
| 148 | 108 | Philips Lamps (R110) | 470 | + 5 | 204 | 134 | Intl | 194 | + ½ |
| 88 | 68 | Plessey (50p) | 370 | + 5 | 434 | 60 | Mdt | 84 | |
| 68 | 48 | Smith Autos (10p) | 57 | + 1 | 84 | 54 | Mohawk Ind | 8 | |
| 371 | 271 | Steel Sheet (50p) | 353 | + 8 | 494 | 334 | MOS (Mohawk Dt | 47½ | + 1½ |
| 41 | 31 | Thorn-EMI (25p) | 388 | + 8 | 54 | 41 | NBA (Magnetic Sci) | 7½ | |
| 431 | 311 | Thorn-EMI (25p) | 408 | + 22 | 604 | 434 | Magnetic Peripl | 57½ | + 2½ |
| 12 | 8 | Unc Oil (10p) | 10 | | 16 | 10 | Mohawk | 1½ | |
| | | OTHER MARKETS* | | | 94 | 64 | Motorola | 87½ | + 2½ |
| | | | | | 64½ | 42 | National Semi | 61½ | + 2½ |
| 90 | 64 | Bus Comp (10p) | 82 | | 84 | 52 | NCR | 74½ | + 2½ |
| 405 | 295 | Comp Secs (£1) | 405 | + 4 | 434 | 274 | Perkin-Elmer | 394 | + 2½ |
| 78 | 58 | Comp Tech Int (10p) | 154 | + 4 | 74 | 44 | Prime | 64½ | + 2½ |
| 131 | 101 | KCRV (£1) | 128 | + 6½ | 264 | 174 | Systemon | 24½ | + 2½ |
| 12 | 8 | Micro & Power (10p) | 10 | | 14 | 8 | Signal | 12½ | + ½ |
| 78 | 58 | Sperikon (10p) | 63 | | 84 | 54 | Sperry Comp | 74½ | + 2½ |
| 108 | 78 | Tridelta Comp (10p) | 100 | + 2 | 134 | 84 | Storage Tech | 12½ | + ½ |
| 108 | 78 | Triumph Comp (10p) | 100 | + 2 | 134 | 84 | Tandon | 12½ | + ½ |
| 88 | 68 | Sprint Dyn (50p) | 85 | | 114 | 74 | Tandy | 104 | + 2½ |
| | | 138 Stocks | 6 | | 84 | 54 | Texas Inst | 80½ | + 2½ |
| 38½ | 26 | Amstrad | 28 | – ½ | 54 | 31½ | Wang Lab A | 47½ | + 1½ |
| | | | | | 54 | 31½ | Wang Lab B | 47½ | + 1½ |
| | | | | | 84 | 54 | Wang | 8½ | |

*Table shows the closing prices of The London Stock Exchange on Thursday and in America on Wednesday. The share index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted where necessary.*
*Shares traded on the Unlisted Securities Market or under Rule 163(3)(a).*




# Texas Instruments profits crash 49%

THE severe recession in the semiconductor business and sbarp price cutting have led to a 49% profit crasb at Texas Instruments.

Profits for 1981 were $108.5 million compared with $216 million for the full year 1980. Sales rose 3%, to $4.2 billion.

The company blamed adverse results from semiconductor operations and from the sale of its distributed computer equipment as the main cause of the poor results.

Like all other US computer companies the persistently strong dollar was blamed for some of its troubles.

Citing weak demand, intense competition and sbarp price-cutting in the semi-conductor industry, the company, which earlier this year laid off 2,800 employees, recently shed another 270 people at plants in Texas.

This brings the total reduction in manpower at TI over the year to just over 6,000, from 89,875 at the end of 1980, to 83,714 at the end of 1981.

*TI chairman Shepherd . . . Profit setedtite and gloomy prospects for 1982*

Faced with falling demand for its chips and with increasing competition from American and Japanese rivals, the company has slashed the price of many of its basic products.

While saying that demand for the company's 64K RAM grew strongly, TI would not comment on industry claims that 64K RAMs were now selling at a quarter the price of a year ago.

And according to a recent feature in the American magazine Fortune, the Japanese have already grabbed over 70% of the emerging 64K market, leaving little room for real growth to American companies like TI.

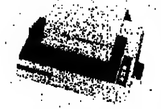
TI's operation in Japan, where the company bas plants, is doing well, according to chairman Mark Shepherd. In the Far East TI's Jspanese competitors, selling into primarily consumer product driven markets, have faced nothing like the slump in the US market.

During the year the company launched 300 new products and increased its R&D expenditure by 10% in an effort to beat its way out of the recession by launching a stream of further new products.

While the Japanese rivals are stepping up capital investment, TI has slashed its capital spending budget by almost $200 million. The company spent $350 million on plant and equipment last year, compared with $548 million in 1980.

Shepherd remains gloomy about the prospects for 1982. He says that TI sees little prospect of a pick-up in world-wide demand, and that markets in the US will remain soft and trading continue depressed in Europe.


The EPSON printer family



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# Operational testing – the only way to cope with those errors

**The Seventh Law of Reliability: Undetectable errors are infinite in variety – in contrast to detectable errors, which, by definition, are limited.**

IN an earlier column I illustrated how many unique logic paths a simple (21 statement) program could have – over 93,000 million. This alone makes it obvious that logic bugs have endless opportunities to hide their irritating grain of sand.

If you thought this was dramatic, then consider the fact that exercising all unique logic paths does *not* exercise all data cases which could be used to pass through a single instruction. Edsger Dijkstra estimated for a single multiply instruction that there were so many cases necessary that it would take a small computer 30,000 years to generate and test each one.

He also pointed out that he believed such extensive (but impossibly impractical) testing was the only possible alternative as long as we treated the program like a "black box."

His alternative was to look inside the black box at the program structure "and convince oneself by reasoning. The only problem is that the amount of reasoning often becomes excessive, with the sad result that bugs remain." (Infotech: Software Engineering).

In short, 100% pre-testing just isn't on. And neither do we have much practical evidence to believe that "reasoning" about the internal structure of a program will help.

Recent IBM software development statistics have brought to light the fact that even with its thorough testing procedures, the error detection rate is only 30%. For every three bugs IBM finds during test phases, its users find seven additional bugs. It is worth noting that IBM has also found that Fagan's inspection method (in common with conventional engineering inspection from which it is derived) has about an 80% rate of detecting available errors.

In addition, inspection can catch errors at much earlier stages of development (over 60% of program coding, in one large US study by TRW). And early catching of errors results in over 10 times lower correction costs.

Presently applied techniques do not seem very effective at catching errors before the system is delivered to the user and although inspection as a method has an impressive record of accomplishment, it is still not perfect.

As Dijkstra points out, the implication of the 30,000 years of calculation is that only a small fraction of the theoretically possible combinations of input data will ever occur during the lifetime of the program.

The consequence of all this is simple, yet profoundly different from present practices. We must shift our emphasis from pre-operational testing of programs over to quality control at later stages. In fact, we must begin to "test" our programs while they are in operation, to a much greater extent than we do today.

In any computer system we have a golden opportunity because we know exactly what input data we have to work with before we have to do something critical with it. Admittedly "before" is not years before; it is only milliseconds before, but that is time enough to stop doing something wrong.

In practice, operational testing means putting a lot more effort into the checking logic of a program. This is something we have historically been reluctant to do because "we didn't have the machine resources." Now we do, if we put reliability above performance.

One type of operational testing is the use of distinct software. One or more independently generated (with different chance errors) program versions are used to check each other, usually with the help of a supervisor program. Any difference in outputs indicates an error.

Another type of operational testing is to use a "deep" database diagnosis program which operates roughly by sampling, or by a multiprogrammed priority, in unison with the operational programs. Database diagnosis programs which do this have been used at Bell Labs in New Jersey, for example. Experience has shown that when these programs are first applied they uncover about one data fault for every three records in the database, which has gone undetected for years by any of our conventional error-finding procedures.

Less than one in 40 database environments seem to have a really deep diagnosis system in use.

I do not mean to imply that early quality control of programme systems is obsolete. But, it is time that we recognised that it can only play a limited role in giving us the reliability we want and need. Operational testing – or built-in programmed double checking – must be applied to a far greater degree than it has been hitherto.

Only in this way will we be able to attack the more realistic problem of the errors which will hurt us if we do not detect them today.

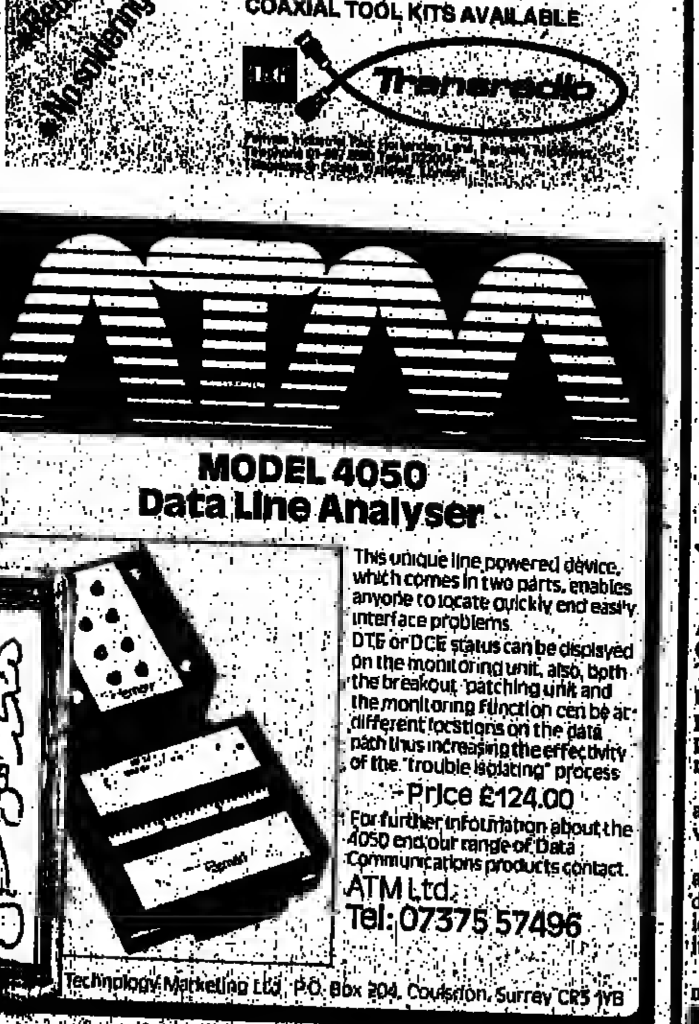
*Tom Gilb*

*Tom Gilb is an independent consultant, lecturer and author on computing topics.*

## 10 YEARS AGO

From Computer Weekly of February 10, 1972

FOUR major computer centres at the focal point of a massive bureau grid were the main feature of a plan developed by the Ministry of Defence. The grid would take over all MoD data processing activities, then handled by about 60 separate computers . . . Burroughs launched the L7000 range of minicomputers into the UK. They had a storage capacity of 80 Kbytes and cost about £19,000 . . . The National Computing Centre announced plans to set up working parties on the new Value Added Tax.





## DOWNTIME

### Generating buzz words

HAVE you noticed that when buzz phrases such as "integrated organizational capability" crop up, that there are 728 other such phrases with exactly the same meaning? I have. And so has the Canadian Defence Department, which has compiled a Buzz Phrase Generator.

BPG generates three-word buzz phrases by selecting at random a word from each of three nine-word columns.

Words in the first column are colour adjectives like institutional and interchangeable. The last column contains nouns like function and hardware. The middle column may contain adjectives, or nouns to be misused as adjectives.

For example no one would dare question the grammar of the phrase "definitive management options." It should, of course, be written "definitive options of management."

Or perhaps it should never be written at all.

Still I shall be happy to supply a list of the three-column matrix of words on receipt of a stamped-addressed envelope. It can readily be implemented on a computer when random three-digit numbers would be used to produce such phrases.

An ideal application of computers, come to think of it.

*"Hold on a minute – it's printing out the mailing list for my Valentines."*

### Who'll be my Valentine?

READERS are invited to send me a Valentine card as evidence of their love and appreciation of Chad's tireless pursuit of truth and knowledge through the year.

I will willingly reciprocate such gestures and extend sincere good wishes to all our readers, be they even readers of rival publications.

This is a time to drop the diffidence and speak from the heart.

How about it then? Let's have some anonymous letters of appreciation. It's only fair when, at other times of the year, we may be bombarded with barbed insults, gushing tirades and threats of legal retribution.

### Computer warfare

WHEN Napoleon's troops were sniped at and food sources destroyed as they painfully retreated from Russia during one of the most vicious of winters, a new type of warfare was born: guerilla warfare. Until then troops had telegraphed their clumsy lurches into battle.

Now guerilla warfare looks like taking a new twist, launching into the vulnerable world of data processing. An article in Science Digest suggests that an entire nation could be plunged into chaos by paralysing its electronic nerve centre.

A foreign power might accomplish "a subtle attack in which the economy was gradually eroded and weakened by inserting computer program changes, or otherwise altering data."

Far-fetched nonsense? Not a bit of it. Computer warfare has already become official policy for some terrorist groups, including Italy's Red Brigades, according to the article.

At least it diverts them from blowing people up. I think we should call them urbane guerillas.

### What the right arm's for

A FEW weeks ago I gave you Chad's Fourth Law of Robotics: That all laws of robotics should be translated into Japanese. This was prompted by the sad case of a Japanese worker killed by an industrial robot.

Now I hear of a robot running amok in France, only this time its victim was a 'fridge.

The robot was demonstrating its ability to walk over to a 'fridge, the door of which opened automatically, fetch a can of beer and open it to slake a thirst.

Opening cans of beer had been managed successfully before, but on this occasion the 'fridge door failed to open.

The robot did not know how to open a 'fridge door. Why should it; it is but a dumb moron? But it was well versed in Isaac Asimov's Second Law of Robotics, which states that it shall obey any commands from a human being except where execution of them contravenes the First Law.

The First Law says nothing about harming 'fridges and so it implemented the Second Law by smashing its iron fist through the 'fridge door and grabbing itself a can.

### Dial your future

I HAVE been eagerly awaiting the day when I could dial my horoscope from the privacy of my own bed, being ashamed to be seen reading my stars in the junk Press. That day is now with us.

With millions of women, and thousands of men, reading their star predictions at least five times a week, British Telecom has seen fit to add Starline to its catalogue of pre-recorded services.

Starline, produced in conjunction with Woman magazine, offers a three-minute in-depth analysis for each of the 12 zodiac signs.

Needless to say, a computer is used to plot the positions of the stars from which accurate assessments of astrological influences are drawn.

*Chad*

## FOCUS

### DP people who deserve medals

WHEN it comes to living dang-ously, the Institute of Data Proc-sing Management takes the b-cuit. Having nominated a list of users for a Rita (Recognition Information Technology Achi-ment) award, it let itself in for avalanche of "why not us" protests.

It is difficult to choose betw- an efficient, cost-effective mai-frame operation incorporating d-tabases, communication netw- channels and multi-layered lev- of staff, and the one-man perso- computer operation which ma- than adequately serves the co-pany.

Similarly, the installation e-ploying handicapped people perhaps operating under the h-dicap of being offshore in t- North Sea could both be seen worthy candidates, well deservi- of an industry award.

Unlike certain other professi- and trades, DP people expect find their reward in user and j- satisfaction and possibly so- financial reward at review ti-

Should the computer prof-sional risk putting his head abo- the installation battlements, it i- likely to be shot off rather th- applauded. As far as the gene- public are concerned, comput- represent incorrect gas bills, i- complete bank statements, inco-clusive medical diagnostics and i- comprehensible weather forecasts.

Encouraged by such bodies a- the National Council for Ci- Liberties, computers are often p- sented as a threat to individ- freedom.

Computers appear to have a l- to answer for, and the opportuni- ties of answering are decidedly limited. However, given the i- creasing use of personal microcom- puters, the public may become better informed, especially as the IT Year organisers are working hard to spread light.

This general state of computer misunderstanding is not limited to the UK. Last month, the Ameri- can Today TV programme on t- Nationwide slot, devoted a series of five early morning sessions to the general theme The Wired Society. The episodes covered such areas as the pace of techno- logical growth, giving the well hashed example of Rolls Royce.

Had autos developed at the same pace as computers, then a Rolls Royce would now cost about £1, could be driven 10 times around the world on a single gallon of fuel and six of them would sit comfort- ably on the top of a pin.

Other areas of TV attention were the computer at home, at work and at school. For UK viewers meanwhile, glimpses of computers are limited to the rather technical approach of the BBC Computer Programme or as an in- formation processing background to standard spy programmes.

From time to time, a particu- larly gifted five-year-old is seen beating his computer opponent at chess, but any meaningful discus- sion on computer-produced graph- ics, music or even voice synthesis is limited.

The DP installation which has survived all budgeting and work- flow odds and produced the desired goods on a clapped-out machine, deserves a medal and aspirins all round.

Possibly on a more practical ba- sis an award could be made for those installations prepared to or- ganise training courses, establish career paths and maintain stan- dards and procedures.

Whatever else, the IDPM itself deserves an industry award for at least attempting to promote 10 good computing causes.

*Alan Simpson*


# ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, February 11, 1982


## White collar fears not allayed

REDUNDANCY is the principal fear among people who are faced with new working practices stemming from the introduction of information technology. Nowhere is this more apparent than among white collar staff.

They are right to be worried. The effect on Britain's manufacturing industry of ordinary but better technology from abroad has put the boot into companies already struggling with Mrs Thatcher's recession. If the still-growing proportion of office-bound workers suffers anything like as much there will be howls of pain from Pontefract to Penge.

Large employers are not being very successful in allaying the fears. The Banking, Insurance and Finance Union plainly does not believe the big banks when they say that cutbacks in recruitment are almost wholly the result of the recession, and in any case, mainly affect school leavers.

Elsewhere, the Cabinet is resisting a technology agreement with the Civil Service unions. There is more than a hint of suspicion that the reason is further Civil Service cuts which the government does not want frustrated by the different issues of improved productivity from information technology.

In the midst of this uncertainty the last thing that employers need is to be faced with objections to working with the technology which appears as machines on the desk. But a report out this week details the insidious problems which threaten the successful use of office computers.

The report, from the Alfred Marks Bureau, documents a string of ailments and complaints commonly cited by VDU operators, not least the problem of boredom.

Employers have been slow in realising that operators are as vital as the equipment itself. There now seems little doubt that in many cases the machinery, in combination with the environment in which it is installed, is fostering bad relations between users and bosses.

Eyestrain can be caused by the glare of fluorescent lights reflected on the gleaming panels of a new word processor, or by typists staring at VDUs all day without adequate rest periods. Back pains can result from badly designed desks, chairs and keyboards. Boredom commonly manifests itself in absenteeism or high staff turnover.

For too long operators' complaints have been looked on as little more than mass hysteria. When selling new technology is a big enough problem in itself, to overlook the more mundane human aspects of the electronic office is foolish.

## A worthwhile venture

LOCAL authorities are not usually identified with dynamic, quick-on-the-feet salesmanship. Lamsac, the Local Authorities' Management Services and Computer Committee, is to be congratulated that it is prepared to change the image with a venture which makes a lot of commercial sense.

It is proposing not only standardisation and co-ordination but that it should actually sell its own, and other people's, software applications.

The decision to set up a software publishing house especially to deal with local authority software is far from being a leap in the dark.

Lamsac has done a lot of thorough research on microcomputing as a method of bringing new applications into use quickly and cheaply. It has concluded that this could sometimes mean using software written outside the local authorities if this is quickest.

Software publishing is rapidly emerging as the most effective way of selling software. Program authors are realising that they need the services of sales and distribution to make the most of their product, while others – IBM and ICL to name but two manufacturers – realise that they need outside-written products.

The publishing technique should work for Lamsac. Computing within local authorities carries a high reputation, and the skills the new venture needs are already there and waiting to be used.

## 1984 and all that . . .

THIS week's example of the strange things people say about computers was sent in by Roger Evernden, of Ellbridge, Cornwall, who wins £5.

For ultra high level languages we will investigate the claims of programmers advertised as being able to write programs for those with no knowledge of programming.

*BBC release on its Computer Literacy Project*



## LETTERS

### Alcohol/creativity

I HAVE been commissioned to write a book entitled Alcohol and the Creative Mind: A Practical Approach. It is a serious, non-specialist discussion of the way alcohol can have a positive influence on creative thinking by breaking down fixed ideas and thinking strategies, making conceptual boundaries less rigid by dissolving the often stifling effects of emotional and cultural blocks inculcated by society and so making it easier to originate fresh and innovative patterns of information.

I combine an historical and sociological perspective with a scientific explanation based on brain physiology and the psychology of creativity.

An important part of the book is the final chapter consisting of interviews with people working in a very broad range of disciplines – from mathematics and philosophy to acting and music – who use alcohol in their approach to the creative aspect of their work. Naturally I am looking for people distinguished by their achievements to lend weight to my scientific argument.

Because of the element of bohemianism and hence the stigma surrounding the combination of alcohol and work the people I am seeking to interview must be self-nominating. My book deals with an important concept largely neglected till now, and is a serious study of the *positive influence* of alcohol on idea production and creative thinking. It is *not* about alcoholism among creative individuals – a point to be stressed because my scientific argument explains and defends the positive correlation between *moderate* intake of alcohol and creativity.

Because of the stigma which my subject carries it is difficult to overemphasise the seriousness of my book's approach. I wonder if anyone willing to talk to me about their relevant experience would write to me at my home address below?

**MICHAEL STEVENS**
**35 Minstor Road**
**London NW2 3SH**

### Opposite of one-off

WE have just become aware of some confusion in terminology and would be interested in hearing readers' views.

We sell Autoprograms, a facility for generating efficient code which makes it suitable for programs in regular use rather than one-off jobs. I have always called such normal routines "production" programs. However, in discussing this with other users, it has become apparent that production programs do not have this meaning in all installations.

Is there a word for the opposite of a one-off program? We are very keen to find out whether there is a generally accepted term, because there is certainly a difference in approach to the two types of program and it would be very convenient if there was also a difference in their names.

**FRANCES MOSELEY**
Senior consultant
**ADM**
**Harrow, Middx**

### Salary matters

I READ the article What Makes the Ideal Job in DP (CW, January 28) with interest, until the last paragraph. I believe the sample chosen is insufficiently representative to give any lead to industries such as manufacturing where salaries are depressed. I am sure that if these were included in the sample, they would pull salary much higher up the list [of factors in urgent need of management attention].

At times the staff haemorrhage from manufacturing to the financial establishments is almost terminal – let's hope they reach saturation soon.

**G. CALVERLEY**
**General manager computer services**
**Turner & Newall Ltd**
**Manchester.**

### Ports network

IN the article Pilnt Comms Network Links Major European Ports (CW, January, 7) there is some erroneous information about the companies that have undertaken the task.

The system was developed by a European consortium led by I/S Datacentralen af 1959, Denmark.

The partners in the consortium are (besides Datacentralen): Datamont, Italy; Mathematischer Beratungs-und Programmierungsdienst GmbH, West Germany; the Steria Group (Steria, France; Steriabel, Belgium; and Sterialux, Luxembourg), and System Dynamics Limited, Ireland.

The system runs on Datacentralen's computers.

**WIM VINK**
**Project manager**
**I/S Datacentralen af 1959.**

### Firefighters clash

I SHOULD like to make a number of points about your article So You Thought that Fire Protection was a Waste of Time and Money (CW, January 21).

My company has for over 20 years manufactured halon 1301 for precisely this type of application, and it is the much preferred agent to use rather than either halon 1211 or $CO_2$. It is inaccurate to state that halon 1211 is the preferred product due to its sweet smell, detachable if leakage occurs.

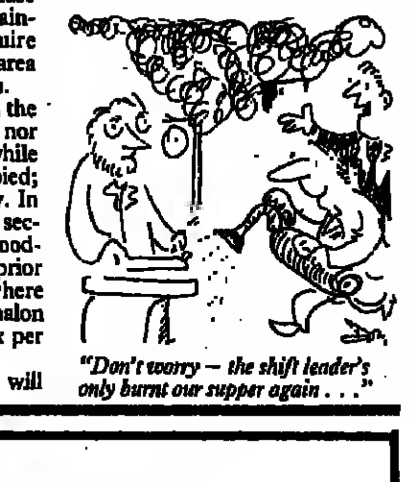
Currently in preparation is British Standard 5306 section 5.2 entitled Halon 1211 Total Flooding Systems, in which it is stated that "under normal conditions halon 1211 is a colourless, odourless and electrically non-conductive gas", as is halon 1301. In any case a correctly installed and maintained system would not require the occupants of the protected area to continually sniff for gas leaks.

However, more important is the fact that neither halon 1211 nor $CO_2$ systems can be operated while the computer room is occupied; prior evacuation is compulsory. In the new British Standard 5306 section 5.1, Halon 1301 Total Flooding Systems, it is stated that prior evacuation is not required where the design concentration of halon 1301 in the air is less than six per cent.

Using a halon 1301 system will save valuable time, money and in extreme cases lives as the detection and extinguishing system is entirely automatic although time delays can be incorporated if required.

Although it is true that halon products produce irritating by-products, this needs to be put into context as the fire itself will produce extremely large quantities of identical products. On average, covering many tests by independent bodies, 15 parts per million ± 10 ppm of breakdown products are produced, which is minute compared with what the fire produces itself.

**STEPHEN FISH**
**Halon market manager**
**Pechiney Ugine Kuhlmann Ltd**
**London.**



*"Don't worry – the shift leader's only burnt our supper again . . ."*

### Prodigal is surpassed

AS a current user of VME/B for two and a half years and a past user of George 3 for 10 years I was surprised at the dog-in-the-manger attitude of Andrew Thomas's article (CW, January 14) on George 3 and VME/B.

One can only assume that the author was never subjected to the traumas of George 3's early childhood and only arrived on the scene when the prodigal son had reached maturity.

VME/B, no one would deny, also had an unhappy childhood, which fortunately it has grown out of to become a far richer operating system in terms of facilities and operability than George 3 ever was.

The wealth of facilities contained within VME/B is not there solely for system programmers to play with. For example, file handling is not only made simple but the same for all types of file. Such characteristics as these are unfortunately missing in George 3.

Returning to the prodigal son, there were many times on which I doubted George's parentage despite the fact he served me so well for so long.

**M. POULTON**
**Computer Manager**
**City of Cardiff.**

## Liveware File by Don

System changes need to be worked into the schedule on time . . . . Mike Ellis discusses the role of the operations analyst

# Planner ensures that systems are 'operations friendly'

THE operations analyst is a member of the operations department with no day-to-day production responsibilities, concentrating full-time on the operational implications of new systems.

Every ops manager who wishes to set up an analyst function must go against the operational grain. He must employ staff who do *not* spend their time worrying about tonight's schedule and solving today's problems. He must allow his ops analysts to plan only for the future.

Where do ops analysts come from? What qualities must they have? How can they gain acceptance?

The first essential is that the operations manager should really believe in the need for the function when he sets it up, as operations analysts will need a high level of management support to counter the objections which will automatically arise.

These will mainly come from the systems teams who will see the ops analysts as a hindrance to systems implementation and an interference in their job.

Systems people will tell you that it is their job to take into account the requirements of all the interested parties in the system (including operations). However, with the greater specialisation of project teams and the increasing division between operations and systems, systems people can become remote from the realities of running computer systems on a production basis.

They will be experts on the system they are developing, but will not necessarily understand how operations runs the existing systems which they must interface with.

The ops analyst, on the other hand, will be an expert in the existing production systems and must work closely with the developers to ensure that the new system can be integrated into the existing production schedules with the minimum of disruption.

> **'There is a tendency to accept shortcomings in systems and find ways around their worst excesses'**

So how does the ops manager go about establishing this role within operations? Most important to begin with is the setting of clear-cut objectives.

A typical brief might be:

"The ops analyst will have no responsibilities for day-to-day production running. He will concentrate on new and amended systems to ensure that they

– fulfil operations design requirements

– are handed over to production in a workable state

– do not disrupt the running of existing systems."

The ops analyst must be encouraged to make a positive contribution at every stage of project development. He is not a systems auditor, sitting in judgment on the designs of others. He is an integral part of this development process, concerned only with the systems operability and not its business functionality.

In today's jargon, he must ensure that systems are "operations friendly."

When the operations manager comes to recruit ops analysts, he need not usually look far. Most installations have one or two operational experts with wide-ranging responsibilities covering such topics as user liaison, system troubleshooting, job setup, file management, JCL writing, input control, production documentation, operator training, etc.

Many of these functions fall naturally into the domain of the ops analyst and can therefore be performed by him. All other "production" activities should be re-allocated to existing staff.

The ops analyst's first priority is to become involved in those systems about to be implemented. He should set up discussions with systems staff to determine when and how the system is to be implemented, what systems support will be provided and what the contingency plans are in the event of failure.

> **'How often have you heard systems people lament "I can never find anyone to talk to in ops"?'**

He must also take a positive role in aiding the implementation, by arranging for additional back-up copies of files to be taken, shift cover to be arranged, production schedules and manuals to be amended, and so on.

For systems being tested, he should review the test plans, suggest any extra tests which might be introduced, review the effect on existing production schedules, etc. And it is his job to arrange additional machine time and media, write production JCL, assist in training/documentation.

For systems in the early stages of development, the ops analyst has time to review any system documentation produced and gradually learn about the system. He must review how the system actually affects operations in terms of input, output, resource requirements, staffing, etc.

*"He should document such events as wasteful use of machine resources . . ."*

As he gains in experience, he will be able to refine this role during the stages of development and formulate operations standards for design, testing and implementation. This will provide a measure of operational uniformity in the systems being developed and should assist in improving operational performance.

To aid operability of systems, the analyst should also review the running of existing systems to see whether they can be enhanced operationally. Because production staff are always under pressure to meet business deadlines, there is a tendency to accept shortcomings in systems and find ways around their worst excesses.

The analyst should document such events as wasteful use of machine resources, systems prone to failure, excessive parameter input. These should be brought to the notice of systems management and a positive commitment to making improvements sought.

Systems reaction to the analyst is usually mixed. Some systems analysts welcome having a single point of contact who can represent operations and spare the time to talk about the future. (How often have you heard the systems people lament "I can never find anyone to talk to in ops. They arrange meetings, but cancel them whenever a production problem crops up"?)

Others see the analyst as a stumbling block whose role is to object to everything and delay all implementations.

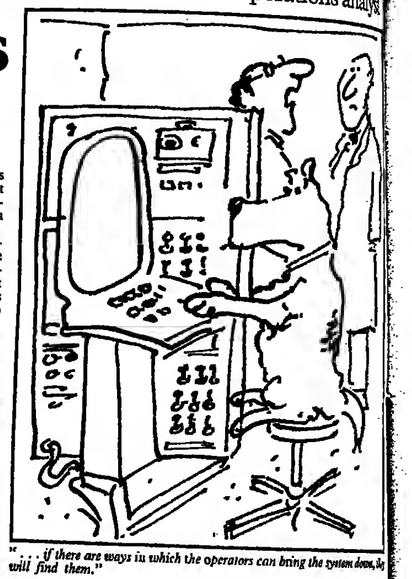
Ultimately, true acceptance of the ops analyst will only come through practical experience of his role in the development process. The proof of the pudding lies in better system implementations – fewer disruptions to existing systems – fewer system failures – better informed operations staff, and the general improvements that come with the proper management of change.

It is not always essential for an ops analyst to come from within operations. Programmers and systems analysts make excellent ops analysts and my experience is that they are always surprised at how much there is to do on the operational side of systems development.

All ops analysts should be given some systems training, since topics like flowcharting, file design, on-line systems design and output report design are critical to his job. Interviewing and influencing skills should also be taught.

Besides the technical training given to ops analysts, emphasis must also be given to understanding the company's business and the way the computer systems will the users require for provision of output? What online system availability percentage can be guaranteed?

This places a requirement on the analyst to keep well in touch with the department, to ensure that he really knows what its needs are. This is very important since he is representing each section in his discussions with the development groups.



*". . . if there are ways in which the operators can bring the system down, they will find them."*

**Know your systems.** The analyst must understand in detail the system which is being designed. He must make time to study any design documents which have been published. He must flowchart the new system, see how it interfaces with existing systems and discuss operational requirements with the designers.

Only when he has this detailed knowledge can he fully relate to the systems analyst doing the job and make positive contributions towards the design of the operational aspects of the system.

He will gradually identify with the project so much that he will virtually become part of the development team. This is very much to be encouraged since far more can be achieved by these personal relationships than by reams of operational standards.

This closeness will assist the recognition of his abilities and the vital role he has to play in project development. All this will lead to

> **'He must always remember that he is representing the interests of the whole ops department'**

to a better designed, tested and implemented system.

**Challenge everything.** He must learn to challenge everything which could impact on the operations department. Every operational assumption made by the systems analyst in his design document must be challenged.

Some will have been made incorrectly, based upon what the systems analyst thinks happens within operations – or should happen. The systems analyst will be an expert on his own system, but not on operations. He may not even know the production schedule of the system he is amending, its dependencies, backups and restart points.

His knowledge of the system may be based upon out-of-date or inaccurate program specifications.

Operations themselves may have changed how and when they run a system for greater operational efficiency or owing to a change in business requirements.

**Be single-minded.** The analyst must always remember that he is representing the interests of the whole ops department. He must therefore be single-minded in knowing what he wants and how to get it.

He will be under a lot of pressure to convince him that he does not really want some of the things which he had requested in his design requirements ("It will delay the project to provide an automatic computer reconciliation of these financial fields. All ops have to do is collect these 10 reports and add this figure to the figure and . . .").

> **'Operations must be sure that once the system is live, they can run the system efficiently day after day . . .'**

During the later phases of project development, the pressure on the systems team to achieve committed implementation dates often becomes greater than ensuring the system is fully tested. (Ellis' axiom says that "The time scale for any phase of project development can always be extended – except for systems testing – which can only be shortened.")

The analyst must stand firm on those aspects of testing without which the system is not workable in operational terms. He will need strong support from his operations manager to stem the tide of "get the system in at all costs".

He may lose the battle, but must ensure that the business users have been made aware of the potential problems inherent in the implementation.

All this may sound very obstructive to the systems analyst used to a totally compliant ops department. But operations must be sure that once the system is live, they can run the system efficiently day after day, year after year.

And what benefits will the business ultimately derive from this function?

I believe that it will gain by having systems which are implemented in a controlled manner, operate more efficiently, fail less often and recover more quickly. This will enable the operations department more easily to provide the business with the level of service it requires to meet its corporate objectives.



by Andrew Thomas

# Operators are bored and troubled by office technology, says report

BRITISH companies have their eyes firmly fixed on technology for improving efficiency in the office, despite widespread complaints of eye strain and other ailments among operators of the new machines. Boredom is also a major problem and it is leading to higher than average absenteeism.

These are some of the findings of a national survey* carried out by the Alfred Marks Bureau, entitled The Machine Dream. But while managers have revealed their complete acceptance of machines in the office, they are often slow to realise that the operators of such devices are as vital as the equipment itself, says the report.

"A machine is often only as good as its operator, and it is imperative that employers take the operator's interests into consideration," says Bernard Marks, chairman of the Alfred Marks Group. "Technology is bringing with it the need for a higher calibre of operator with a clear requirement for almost continuous training."

Eye strain is the most common complaint of VDU operators, and headaches and migraines are suffered most often by data preparation staff.

Some employers have reacted by eliminating glare and installing air conditioning, and some prohibit word processor operators from using a VDU for longer than certain periods without a break.

Alfred Marks sent questionnaires to the executives responsible for machine operators in companies throughout the country, and replies were received from 193 firms employing anything from 25 to more than 5,000 staff. Half of the companies were in the Greater London area, with the remainder spread throughout Britain.

Word processing equipment continues to spread, with 57% of the companies questioned now using them. But old habits die hard, and manual typewriters are still to be found in 62% of companies. Electronic typewriters, with simple WP capabilities, are also on the increase and can be seen in nearly a third of the offices surveyed.

Many companies thought that it was still too early to state with any degree of certainty what effect the new technology was having on their work. Those that had already seen a change thought that productivity had been increased and the quality of the work done was now higher.

Word processors were responsible for taking the boredom out of repetitive typing work, and many executives were experiencing increased efficiency from their secretaries as WP equipment took over much of the time-consuming work.

Few companies said that the installation of new technology had led to redundancies, and one company had even increased staffing levels.

Operators working with the same piece of equipment all day and every day can suffer from boredom and illness that can be directly attributed to the machinery. Boredom usually manifests itself in higher than average absenteeism – 33% of those sampled said that pool typists and data entry staff were the most susceptible job categories.

Word processor operators are absent from work no more than the national average, which is just as well because the word processor was the machine thought most likely to be closed down as a result of operator absence.

Eye strain is now the No 1 illness, demoting the 1977 leader, headaches and migraines, to the No 2 slot. The increase in the number of VDUs in use has been paralleled by the increase in eye strain. From third position in 1974, it moved to second in 1977, and takes top place today with 40%.

Although headaches and migraines are relegated to No 2, they prove a regular problem for over half of the data prep operators. Whether this is due to mechanical noise or constant chatter is not made clear.

Many companies are determined to make their word processor operators comfortable. The majority of offices (61%) are air conditioned, and 42% have taken steps to eliminate surface glare, thus reducing the likelihood of eye strain and headaches.

Regulations in force at one firm prevents its WP operators from using a VDU for more than three hours without a break, and in London, firms appear to be concerned about the heat output of the equipment, with 82% installing air conditioning. Throughout the rest of Britain, 58% of WP users have taken steps to eliminate surface glare.

Probably the most important problem caused by working with machines is the routine element of the job. This, in conjunction with the physical problems caused, might suggest a high turnover of staff. However, the present economic climate appears to make all categories of office worker prefer to stay with their current employer, rather than risk a change of job.

Data prep staff appear to be the principal source of worry to personnel departments. Their absenteeism is higher than other job categories, and staff turnover is noticeably higher. In addition, data prep vacancies are the most difficult to fill. Data prep operators had the highest rate of turnover in 42% of the suburban long, executives will find themselves having to operate screen-based computers, otherwise they will lose the marketing edge of competitors who are welcoming and adapting to the office of tomorrow, today."

| | |
|---|---|
| Air conditioning | 61% |
| Eliminating glare | 42% |
| Ergonomically designed desks & chairs | 37% |
| Noise absorbers | 32% |
| Modified lighting | 26% |
| Regular eye-testing | 18% |
| Regulated rest periods | 16% |

*Measures taken by companies using word processors*

| | |
|---|---|
| Eye fatigue | 40% |
| Headaches and migraines | 35% |
| Back ache | 30% |
| Stomach problems | 23% |
| Pains in arms and necks | 15% |
| Stress and worry | 13% |
| Tiredness | 8% |
| Ear ache | 3% |

*Most common ailments among machine operators*

| | |
|---|---|
| Time-wasting due to poor instruction from executives | 48% |
| Difficulty recruiting staff with adequate experience | 39% |
| Difficulty recruiting staff with good skills | 36% |
| Lack of personal contact with executives | 21% |
| Dissatisfaction with dictating methods of executives | 15% |
| Eye strain, headaches or other ailments | 12% |
| Boredom | 12% |
| Preferential treatment given to individual executives by individual typists | 6% |
| Dissatisfaction with the equipment | 6% |
| Discomfort with the working environment | 3% |

*Problems most concerning managers in word processing areas*

| | High turnover | Recruitment difficulty |
|---|---|---|
| Data prep operators | 23% | 27% |
| Individual WP operators | 15% | 14% |
| Clustered WP operators | 5% | 23% |

*Job categories suffering high turnover and recruiting difficulties.*

*Employers urged to take greater care of their machine operators suffering from eye strain, fatigue and boredom.*

* **The Machine Dream** – A report on the experience and expectations of companies employing full-time machine operators to improve office productivity. Alfred Marks Bureau Statistical Services Division. Adia House, 84-86 Regent Street, London W1R 5PA. £20.00.

April 23-25, 1982
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**PROGRAMMERS PAGE** — by Philip Hunter

# Can you spot the Pascal bugs?

PROGRAMMERS with a fluency in Pascal might care to flex their wits on the following exercise, which contains five errors in a nine-line Pascal program. See if you can spot them before reading the answers at the bottom of the page.

```
program test
const
  nil = '0';
begin
  if nil# '0' then
    writeln('WRONG', +nil, .123)
  else
    writeln( 'RIGHT')
end.
```

If you fail to pick out all five errors, be not disheartened for you will be in the company of five reputable Pascal compilers. They were fed the code and not one found all the errors.

So if you have a Pascal compiler available, it might be worth while giving the program a run.

The exercise was used as ammunition in an article urging users and suppliers to adopt Pascal compilers conforming to a new standard due to be published by BSI, British Standards Institute, this month. The article is written by Brian Wichmann – a senior principal scientific officer at the Information Technology and Computing Centre of the National Physical Laboratory (NPL).

The big drawback of Pascal hitherto, Wichmann argues, has been the lack of a standard. Pascal programs have therefore been machine dependent.

Wichmann goes on to claim that if the imminent standard is adopted, Pascal programs will be far more portable than programs written in Fortran or Cobol, which both have had standards for well over ten years.

Why is this so? Wichmann has a ready answer. The standard for Fortran and Cobol is no more than a definition and does not require that invalid programs be rejected by a compiler. At the same time the Pascal standard does not have the many options available to Fortran and Cobol.

Some Fortran and Cobol programs are not portable because they use options specific to particular compilers.

Wichmann also claims that Pascal compilers will have to undergo more rigorous testing before being cleared as standard than Fortran or Cobol compilers do at present. A test suite for this purpose has been developed by the NPL in collaboration with the University of Tasmania.

This suite, which conforms to standards agreed by ISO, International Standards Organisation, includes a collection of incorrect sample programs such as the exercise on this page which the compilers must reject with suitable diagnostics in order to pass.

There are also quality tests to ensure that the compiler can handle programs of sufficient complexity and that real arithmetic is sufficiently accurate.

There is now a good standard available and it is vital that it is used, Wichmann urges. This can be achieved only by independent testing of compilers, and this possibility is being investigated by the BSI.

*LAW . . . His program should lead to savings.*

## Brian is a 'model' PhD

A NEW application of computer modelling techniques to the design of internal combustion engines has won a PhD for a project engineer in the Midlands.

The finite element analysis method of analysing structures by dividing them into small imaginary regular pieces was combined with fluid mechanics to provide a complete model of the main bearing and crankshaft.

The degree was awarded to Brian Law, of diesel engine makers Perkins Engines of Peterborough, by Nottingham University.

The work took four years, and the write-up of the thesis a year of what Law describes as "very hard work."

Law's program should lead to savings through the exact calculation of crankshaft strengths. At present such calculations can be inaccurate and crankshafts are therefore usually made much too strong, resulting in unnecessary expense.

At the same time the program should help eliminate the trial and error aspect of crankshaft assembly by providing precise specifications to begin with.

There is even the possibility that this new program will improve the reliability of engines by enabling tolerances to be more accurately determined. "It can investigate when the engine would be like with a bent crankshaft," Law says.

Whether this would eliminate those occasional batches of dud cars off the assembly line Law is unable to say. It is well known that some new cars start to develop early faults because crankshafts and bearings were set slightly out of alignment.

## Coping with the rubbish

A SYSTEM called Ross has brought publicity to the activities of Lamsac, the Local Authorities Management Services and Computer Committee.

Ross, Refuse Operation System Simulation to its friends, applies methods of so-called expert systems to calculate the optimum deployment of men, machines and dustbins for efficient refuse collection. Local authorities pay for the computing involved, £40 for an initial audit and more for the full service, depending on the size of the operation.

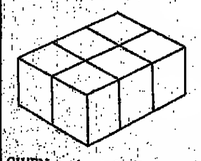
There is no intention to ram efficiency down the throat of local authorities, according to Lamsac's director Roy Barnes. "The system gives management a choice – pay or save," he says.

It all depends on which of 19 different methods of refuge collection the authority adopts.

*BARNES . . . "Pay or save."*

The computer system breaks down the 19 methods of collection and other factors such as number of vehicles and bins into 300 elements for analysis on an ICL 1500. There is also a version for the Commodore Pet, the micro most favoured by local government.

## PUZZLER



GIVEN a piece of string 360cm long, what are the dimensions of the largest rectangular parcel (as regards volume) that can be tied up in the way illustrated here – once right round the length, and twice right round the width? Ignore whatever extra string might be required to form a knot.

See page 46 for solution. (This diagram is just to show the general shape involved, and is not drawn to scale.)

## Pascal code errors

Errors in code of program (see story top of page):

1. Program must contain the word output as a parameter.
2. Nil cannot be used as an identifier because it is a reserved word.
3. # is written as <> (not equals).
4. Nil cannot follow a sign.
5. A decimal point must be preceded by a digit.

So the corrected program is:

```
program test (output);
  nil = '0';
begin
  if nil <> '0' then
    writeln('WRONG', nil, 0.123)
  else
    writeln( 'RIGHT')
end.
```


# Ouch!

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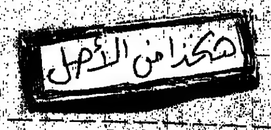

CW11/2





# Looking for low-cost resilience? You don't need a list. A word will do.

# MOMENTUM!

If you're interested in looking at computers for on-line transaction processing, your list of computer manufacturers can be just about as long or short as you like.

But if you want resilience – the built-in ability of your system to recuperate quickly after a failure – your list will be very short indeed.

**And if you want this "availability insurance" without having to take a giant leap to a fully-duplicated system, forget about the list altogether. Just remember a word. . .**

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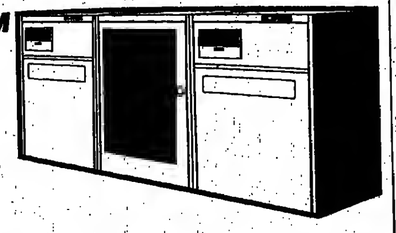

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**Andrew Thomas kicks off the DP industry's sports season . . Here is your chance to put Sebastian Coe in the shade**

COMPUTASTARS

Sponsored by Computer Weekly

# Calling all DP athletes — Computastars is back!

TIME to get your tracksuit out of mothballs and blow the dust off your plimsolls — it's Computastars season again. This year's chance for the men and women from computer users and suppliers across the country to compete for Computer Weekly's national sports awards.

And, after that, go on to battle with contingents from Holland and Belgium for European medals.

Computastars is a team and individual competition which calls for athletics skills on track and field, in general sports and in the gymnasium. There are to be four regional heats, building up to national finals.

All are sponsored this year, as usual, by Computer Weekly, which will be awarding gold, silver and bronze medals along with individual and team trophies.

Entries are open to men's and women's teams of between three and five, and any number of teams can enter from a single user or supplier company.

Each team puts up members who compete in the eight events which make up the regional heats. One of the team members has to do all the events, and therefore competes against the star from the other teams in an individual competition. Then, if the team makes it through to the finals, the star goes for an individual national medal.

Events can range from long jump and discus through squat thrusts and short sprints to the dreaded steeplechase. For now, however, organisers Gordon and Maureen Cairns are keeping the exact details to themselves, in the best tradition of Computastars.

**Dates, venues**
**Crawley, Saturday May 15**
**Enfield, Sunday May 23**
**Barnsley, Sunday June 13**
**Birmingham, Saturday June 26**
**UK Finals:**
**Birmingham, Saturday July 29**

Among the strongest teams last year were the men of BL Systems, who won the national team award. Kalamazoo's Jeff Harrison carried off the individual gold.

In the women's events, Legal & General Assurance won the team prize for the second year running, with Number One Bridget Cuthill winning the women's individual gold for the second year.

Kalamazoo's men and women entered for the first time and came second in both team events. Jeff Harrison then went on to win the European gold in Holland, while Legal & General's Cuthill took the women's award.

They and many others will be among the hundreds of sportsmen and women taking part across the country this year.

First UK heat will be for the Southern region, to be held at Crawley on May 15. London area teams get their chance at Enfield on May 23, the North on June 13 at Barnsley, and the Midlands at Birmingham on June 26.

The finals of the UK competition will be held in Birmingham on Saturday July 29. The European final will take place in Belgium in early September, and the top three men's and women's teams from the UK will be invited to be there.

Entry fee is £35 per team, with an additional £15 should the team make it to the finals. The number of teams for each regional heat must unfortunately be restricted to 40, so it's a case of first come, first served.

Closing date for receipt of entries is Friday, March 19. The entry form is at the foot of this page.

*Paul White sprints for the London Borough of Lambeth at the 1981 Barnet heat*

*Women at Gloucester County Council tug to victory in the 1981 Computatug (Uk finals)*

## This year's specials

THIS year sees an extension to the main competition with special categories for small units and veterans, as well as a repeat of the popular 1981 tug-of-war competition.

The small units section is to give those companies or installations which have no more than 25 eligible people working at one location a chance to win their own award while still competing in the main competition to win their own award while still competing in the main competition. The term "one location" here means within a 25-mile radius of the location.

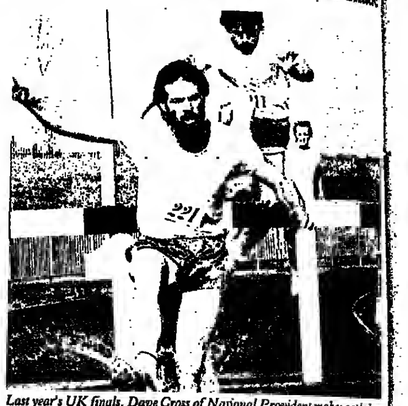
Likewise, the veterans section is for teams which comprise members who are all over 35. Both these special sections have the standard £35 entry fee.

These classes are being run this year for men only, though if they attract enough interest among women they will be extended there as well.

Run alongside Computastars is the tug-of-war competition, Computatug. An opportunity to prove superstrength, it is open to teams of five, men or women, though not those already competing in Computastars.

The entry cost is £10 per team. The same rules and eligibility regulations as for the main competition apply.

**If you have a query on Computastars, please don't contact us at Computer Weekly — get in touch with the organiser at 117b High Street, Croydon, CR0 1QG. Tel: 01-688-6690.**



*Last year's UK finals. Dave Cross of National Provident makes a splash during the steeplechase. Behind him is Rowntree Mackintosh's Martin Rigby*

## Competition rules

THE rules for the 1982 Computastars are:—

- Teams will consist of not less than three and not more than five people.
- Each team other than o veterans' team is required to nominate a Number One competitor who will compete for the individual title in addition to being a member of the team.
- Teams will compete in the regional preliminary heats.
- The winning teams from each region will be invited to participate in the national final. Additionally, in the men's competition, the highest scoring veterans team and the highest scoring small unit team will be invited to compete in the national finals.
- The top three men's and women's teams at the UK finals will be invited to participate in the European finals, scheduled for early September in Belgium.
- In each event in each round, three members of the team will compete — the nominated Number One, and two other team members chosen by the team captain.
- Team captains must be a member of the team and the organisers will only recognise the team captain's selection for events.
- Should the Number One be unable to compete after being nominated, then the team captain will nominate a substitute from the remaining team members. If a substitute for the original Number One is used after the competition has started, then neither the original Number One nor the substitute will be eligible for the individual title.
- If a Number One or his/her substitute drops out of the competition, through injury, for example, then that person cannot take part in the remainder of the competition.
- Failure to comply with the nomination of teams and the rule of substitution will result in disqualification.
- The competition will normally consist of eight events, selected from the following classes which apply to both men and women.

1. Running events — any distance up to 800 yards per individual and possibly including hurdles.
2. Throwing events — ranging from cricket/hockey balls to a competition weight shot. Basket or netball skills may also be included.
3. General sports skills — selected from a number of categories which demonstrate foot or hand co-ordination and skills, including target shooting, penalties, dribbling, rugby drop kicks and hockey-style events.
4. Gymnastics — usually short, sharp, violent and somewhat tiring.

- In the running event, teams may be required to run a relay. Running order will be at the discretion of the team captain.
- In the case of a dispute, only the team captain will have the responsibility of representing his team.
- The breaker: In the team competition, the best result in the last event will decide. In the individual competition, the best effort in the last event will decide.
- At the meetings, the referee's decision will be final and not subject to appeal.

## Eligibility for entry

THOSE eligible to take part in Computastars fall into the following categories:

- Only personnel who are fully costed to data processing activities.
- Only personnel who were employed by their present company prior to February 1, 1982 can represent that company.
- Should a competitor leave the employ of the company he or she represents, that person will no longer be eligible to represent that company after the date of leaving.
- Companies may enter as many teams as they wish, subject to eligibility. A competitor may represent only one team and, having been nominated for that team, may not represent any other team in the competition during the current year.
- Teams wishing to enter the veterans' section (men only) must wholly comprise members who are 35 years old or over on February 1, 1982. Teams in this section are not eligible to nominate a Number One of the individual title, and event selection will be any three members from the team.
- Teams wishing to enter the small units section of the men's competition must meet the following conditions.

1. The unit or company unit must employ less than 25 eligible people (men or women and including contract staff), within a 25 mile radius of the location of the team entering.
2. The team will compete in the main competition and must also nominate a Number One who will compete for the individual title.

- Teams not entering the small units competition may consist of members of the company drawn from any location.
- Contract staff may be used subject to the qualifying conditions.
- Once a team entry has been accepted there will be no refund of the entry fee.
- All costs incurred are the responsibility of the teams.
- All competitors participate at their own risk and the organisers do not accept any responsibility for loss of personal or company property or injury, however caused.
- All entries must be signed by the data processing manager or equivalent authority.

### COMPUTASTARS ENTRY FORM

We have read and accept the conditions of entry for the Computastars/Computatug 1982 and would like to enter

| | | |
|---|---|---|
| **Main competition** | **.....Men's teams** | **.....Women's teams** |
| **Small units** | **.....Men's teams** | |
| **Veterans** | **.....Men's teams** | |
| **Computatug** | **.....Men's teams** | **.....Women's teams** |

Name of team(s).....
Company .....
Address .....
.....
Name of contact .....
Telephone .....Extension.....
Signature of DP manager or equivalent authority .....
Position held .....

We would like to compete in the following region:

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**LONDON (ENFIELD)** **SOUTH (CRAWLEY)**

please circle appropriate region

Enclosed is £..... to cover the entry fees for the teams(s). Cheques should be made payable to Computastars Ltd.
In all matters relating to the rules or conditions of entry, the decision of the organisers is final.

**Please send entry form and fees to Computastars, 117b High Street, Croydon CR0 1QG. Telephone 01-688 6690**

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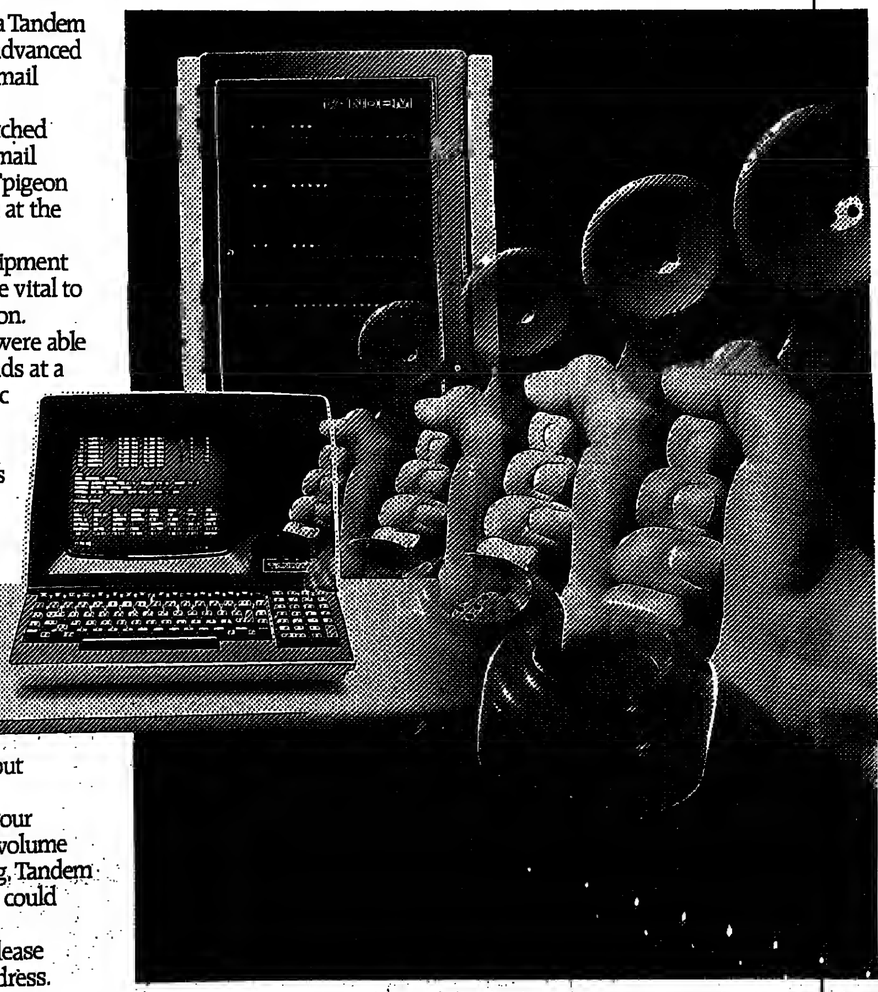


TANDEM

Tandem Computers Ltd, Peel House, 32-34 Church Road, Northolt, UB5 5AB Tel: 01-841-7381 Telex: 933333
Also at Bilbao House, 36/38 New Broad Street, London EC2 and 54 Hagley Road, Edgbaston, Birmingham
Tandem and NonStop are trademarks of Tandem Computers Inc.

# Essential vocabulary is compressed into a small space

**Dictionary of Data Processing (Second Edition). Jeff Maynard. Butterworth. £12.00.**

IN the six years that have elapsed since the first edition of this book was published, DP has changed dramatically not in terms of volume but in structure and area. The basic processes remain the same, but equipment has become more efficient and generally smaller with the development of the silicon chip, particularly the Z80.

This has meant the spread of DP into new areas; at the simplest level into domestic appliances and traffic lights, and at the more complicated level into industry. More people are now forced to become involved in talking about computers, and are entering a new and strange world fraught with jargon.

An increase in the use of word processors and other electronic office equipment has also introduced a new range of technical vocabulary, with which every office manager and secretary is going to have to become familiar sooner or later.

The author tries to cover words in every aspect of DP in only 200 pages, which means that explanations are necessarily short and sometimes may verge on the inadequate for readers with no experience of computers.

For example, a modem is described as "a device used to modulate and demodulate signals to be transmitted over communications facilities," with no clue as to its physical nature.

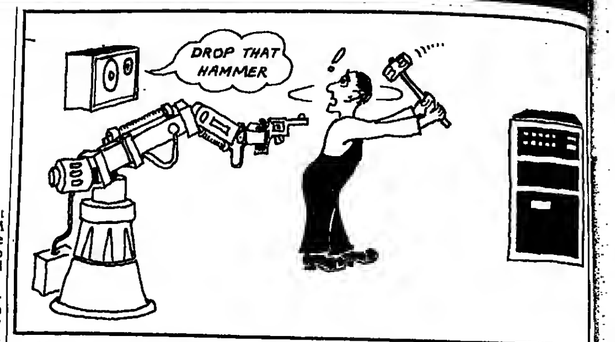
In addition to the lexicogrsphical section, there are some very useful appendices, listing common acronyms and abbreviations – as essential in the computer industry as in the civil service.

It is sadly true though, that a dictionary is out of date the day after it is written, and a few recent arrivals such as Unix and CP/M operating systems and APL, are absent. VMB and VMK are also missing but old faithfuls DOS and George are in.

Tables of hexadecimal to decimal conversion make this a book to keep in the desk drawer for handy refereoce, as do EBCDIC tables, useful when interpreting punch cards without the aid of a card reader, and similar tables for paper tape.

Considering its size and price, this book is excellent value for money, and contains a wealth of information that we may all need to use every day in the future. What does EBCDIC stand for? "Extended Binary Coded Decimal Interchange Code," it says in the dictionary. Point proved?

*Maggie McLening*




# This introduction is reader friendly

**Illustrating Computers (without much jargon). Colin Day and Donald Alcock. Pan Books. £1.95.**

IF books can be described as "reader friendly" in the same way that interactive computer systems are "user friendly", then this one fits the bill exactly.

Every aspect of computing mentioned is illustrated with a diagram or cartoon, and the book is written in a chatty style.

The authors are to be congratulated on simplifying the explanation of what is inside a computer and how it works into a mere two chapters, much of which is devoted to the mysteries of binary. Silicon chips are also described in great detail, previewing a chapter dedicated to microcomputers and their uses.

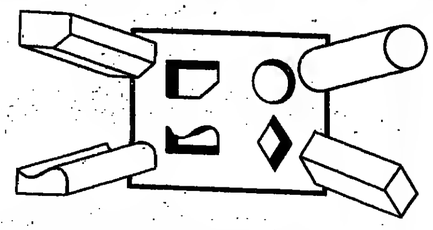
The age-old question of whether computers put vast numbers of people out of work is raised, comparing this to the Luddite riots, and the authors attempt to answer it in the form of a cartoon (shown above).

As an aid to easy enlightenment for those who know nothing about DP at all, this book is excellent.

*M.H.*


Now available as a book £8 post and packing free

# DATA ANALYSIS



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# Aid to the intimidated first time user

**The Director's Guide to Computing 1981. An Institute of Directors publication. £1.95.**

I AM generally suspicious of guidebooks full of advertisements because all too often the advertising tends to colour the editorial content, so it was encouraging to read this apparently unbiased account of the fundamental approach the laymen might adopt to understanding computers.

Do not be put off by this modest-looking publication, for between its flimsy covers is to be found a wealth of good sound advice particularly useful for the first time user – that is both concise and free from computer jargon.

It is all too easy to fall into the trap of being intimidated by the prospect of getting a computer and consequently seeking the often expensive services of an "independent" consultant, but, as this guide does well to remind us, there is frequently more to these so-called experts than meets the eye. As a basic introduction to this important management tool one could benefit considerably from this guide.

An interesting chapter by Dag Eyelons (one of the dozen authors) on the alternatives to in-house computing, particularly bureaux, traces their development through to the future.

Perhaps one of the most poignant comments in this guide comes from P. E. Thomas: "The computer business is based on complex and fast changing technology (with which it sometimes seems obsessed), talks a language of its own, and is ill bad at communicating in business terms."

*David Gordon*
*Deputy chairman of Grower Publications Ltd., London, which has just installed its first computer system.*

# Basic telecoms guide in official handbook

**Telecomms Users' Handbook. M. E. Corby, E. J. Donohue and M. P. R. Hamer. Telecommunications Press, London. 370pp. £20.**

WE have yet to see any material fulfilment of the opportunities promised by the passing of the British Telecommunications Act, but there is a lot of interest professed in the area and almost as much ignorance displayed.

This handbook provides a plain language guide to the basics which could be useful to the manager finding his way around in telecommunications for the first time.

The book is firmly aimed at users, providing a range of information from lists of equipment and service suppliers to breakdowns of various aspects of British Telecom's finances.

Reference material such as the 18 pages of names and addresses of regional Post Office Advisory Committee officials alternates with passages on dealing with consumer problems and selecting consultants and training courses.

But the bulk of the book consists of introductory explanations on telex message switches, on PABXs, on viewdata and teletext. The most topical explanation is the summary of the government's liberalisation policy, the provisions of the British Telecommunications Act and the roles of the Office of Fair Trading and the Monopolies and Mergers Commission.

*Donald Kennett*

# Helping librarians to choose

**Minis, Micros and Terminals for Libraries and Information Services. Edited by Alan Gilchrist, Heyden. 121pp. £7.50.**

DESPITE its rather dull and daunting appearance, this is an invaluable book for any librarian or information scientist contemplating automation.

The eleven papers are written by specialists with practical experience of their subjects and they give helpful advice and information. However, as the conference that the papers are taken from was given in 1980, some of the information may be out of date.

There is a useful index and some of the papers give a list of references. A glossary of technical terms would have been welcome, if only to explain what "electronic mice" are.

*Sue Kewley*
*Assistant librarian, Stevenage General Library, Herts.*



# Cassani appointed to IBM boards

KASPAR CASSANI, IBM vice-president, has been elected to the boards of IBM UK Holdings and IBM UK, following the resignation of IBM's senior vice-president Jacques Maisonrouge from those boards.

The changes follow Maisonrouge's appointment to the company's corporate office and corporate management committee in December. Cassani succeeded him as chairman and chief executive officer of the IBM World Trade/Middle East/Africa Corporation and as president IBM Europe.

Cassani joined IBM Switzerland in 1951, and after holding sales and staff positions there went to IBM Europe as director of operations for South-west Europe. He became director of marketing in 1967.

After a year as director of product line at IBM World Trade headquarters in the US, he became general manager, North-west Europe in 1971, based in Paris.

In 1976 he became administrateur-directeur-general, IBM Europe, and in 1980 was elected president of IBM World Trade Europe/Middle East/Africa Corporation.

Cassani joined IBM Switzerland

■ **Richard Hamper** has joined Wordplex as national systems manager, responsible for software support. He was previously with Raytheon International Data Systems, where he was marketing services manager for two years, based in Sydney, Australia.

■ **Jack Iddon** has been appointed Midlands sales executive at Versatec. He previously spent four years with Texas Instruments, where he was Northern region sales manager in the digital systems division.

■ **Alan Griffiths** has been appointed product manager, communications products, at Computer Technology. He joined the company after two years as sales executive with Datapoint.

■ **Mario Guzzetti**, former international sales manager with Perkin-Elmer Data Systems, has become sales and marketing manager for Europe, the Middle East and Africa at Anadex. Immediately before joining Anadex he managed his own company, Wordata, which acted as a distributor for AM Jaquard Systems.

■ **Robert Wright** has been appointed sales manager for the North-east of England at Atlantic Computer Leasing. He was previously country sales manager with Leasco.

■ **Mike Bardell-Smith** has been appointed systems OEM manager at Data Recognition. He was formerly the company's software manager.

*Determination paid off for David Mawson, recently awarded the National Computing Centre Certificate in basic systems analysis. Mawson, who is blind, was given all course material four months before he attended the course. Exercises and tests were transcribed on to audio cassettes, and he answered the questions and dictated his project using his own dictaphone. Mawson has worked for the computer branch of the North-eastern regional headquarters of the Central Electricity Board at Horrogate for 11 years. The course was run by John Bailey of the NCC.*

# Top jobs at Systems Industries

TWO vice-presidents at Systems Industries have taken a step up the company ladder to become senior vice-presidents in their own fields.

**Kent Winton** becomes senior vice-president, marketing. He has been with the company since 1970, and vice-president, marketing since 1972. He will take responsibility for all Systems Industries' marketing activities worldwide.

**Richard Milligan**, who joined SI in 1973, has been promoted to senior vice-president, customer service. He was appointed vice-president, customer service in 1978. In his new role, he will be responsible for all manufacturing and domestic customer service operations.

*Alison Newell, managing director of F-International, has been co-opted to the Council of the Computing Services Association. She will also chair the internal services committee of the CSA.*

■ **Peter Johns, Stephen Jackson** and **Geoff Bond** have been appointed sales executives at Interactive Database Systems. Johns joins the company from Altergo, where he was responsible for developing the Northern office. His territory with IDS will be Manchester, Liverpool and Newcastle. Jackson, whose territory is North London, joins from Burroughs, and Bond, who becomes support manager, was formerly with a shipping company.

■ **Gerald Roll** has been appointed marketing manager for British Micro's MIMI 801 range of microcomputers. He was previously in marketing for 10 years with Triumph Adler.

■ **Gavin Dyer** has joined Systems Production as sales manager. He was previously sales manager at Anadex.

■ **Nick Leonard** has been appointed sales manager for the financial planning division of Package Programs Ltd, PPL. He was previously financial director of several P&O subsidiaries.

# Head of R&D for Sinclair

SINCLAIR research's new R&D division, based in Southampton, will be headed by Michael Pye, who has been appointed head of communications development.

He joins the company from Honeywell Control Systems (UK), where he was director of engineering. Previous positions include director of electronics development at Gillette and technical and later managing director at Sinclair Radionics.

## New director

FORMER BL International chairman Pratt Thompson has joined the board of the AID Group as a non-executive director. His former posts have included deputy managing director of the electrical components group Bowthorpe Holdings and vice-president of the US conglomerate AMF.

## DIARY

**FEBRUARY 15**

Computer networking. BCS Cheltenham and Gloucester branch. Queens Hotel, Cheltenham. 7.30.

Medical systems. BCS Glasgow branch. The Music Room, Staff Club, University of Strathclyde, John Street, Glasgow. 6.30.

**FEBRUARY 16**

WA Packages to micros. BCS Word Processing and Office Automation Group. Prudential Assurance, 142 Holborn Bars, London EC1. 5.30.

Space invaders and software protection. BCS North Staffordshire branch. Computer Centre, North Staffs Polytechnic, Stafford. 8.00.

**FEBRUARY 17**

Trends in engineering applications with 16-bit microprocessors, half-day symposium. BCS Birmingham branch. Sumpner Building, University of Aston. 2.30.

How do we classify business systems? BCS BIS Group. 6.00. Contact Colin Campbell on 01-580 5599 for details.

AIM visit. Computing for solicitors. BCS Humberside branch. AIM, Derrington Street, Humberside. 7.30.

Process control at Fords. BCS Process Control Group. Ford Motor Co. 10.30. Registration fee for the day is £15. Advanced registration required. Contact Peter Andow, Dept. of Chemical Engineering, Loughborough University, Loughborough, Leicestershire, LE11 3TU.

**FEBRUARY 18**

Computers in weather forecasting. BCS Leeds branch. Parkway Hotel, Leeds. 6.30.

## CONFERENCES

■ THE fourth annual symposium on the developments in electronic mail and messaging in Europe will be held on March 22-23 at the Cumberland Hotel, London. Organised by the Yankee Group, it aims to bring together speakers from Europe and North America to present an anglysis of the range of services, systems, products and suppliers in electronic mail. Topics include text messaging systems, electronic voice messaging systems, European market dynamics and teletex. Fee is £295 + VAT. Further information from Al Dunn, The Yankee Group, Regal House, Lower Road, Chorleywood, Herts. Tel: (44) 9278 4119.

■ A CONFERENCE and exhibition devoted to local networks and distributed office systems is being organised by Online and will be held at the London Tara Hotel from April 14-16. The conference is structured in six half-day sessions and will deal with the selection and implementation of local network systems, including developments in Ethernet and the Cambridge Ring, and PABX. Online claims that the exhibition of local network products is the first of its kind. Registration fee is £385 + VAT. Details from Online Conferences, Argyle House, Northwood Hills, Middx HA6 1TS. Tel: (09274) 28211.


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*The Paperax 2000 paper shredder.*

## Shredder is portable

THE 2000 paper shredder is claimed by its manufacturer, Paperax, to be the first truly portable machine of its kind on the UK market. The machine fits neatly on to any desktop or working surface, allowing it to be used in any area within the office environment.

It weighs only 12kg, can be moved by any member of staff, and its portability enables it to be transported on the back seat of a car for meetings away from the office.

The shredder will cope with nearly all sizes of paper, up to and including computer printout of 14½in (370mm) and it will accept staples and paper clips on reports without difficulty, says Paperax.

**Paperax Limited (CW), Unit 5, Southdown Industrial Estate, Harpenden, Herts. Tel: (05827) 66271.**

## Drum plotter for CAD/CAM users

ITS new wide drum plotter produces large scale, multi-colour drawings economically for computer-aided design and manufacturing users, says Calcomp.

The Model 1060 is designed to combine the space saving features of a drum plotter with the performance of large flatbeds. It has a 54in wide drum which provides a maximum drawing size of 4ft 6in × 120ft (the roll length). It is available with an optional 36in wide drum for maximum user flexibility.

The high performance 1060 has a drawing speed of 30ins per second, uses linear pen actuation for the fastest pen up/down times available, and has an acceleration rate of 2G.

With four program selectable pens, the 1060 accepts four media types – translucent, rag, vellum and polyester film. Through operator controlled speed and acceleration, high plot quality is obtained with four different pen types.

Priced at about £26,000 (in single quantity), the plotter can operate in online, offline, and remote/time sharing environments.

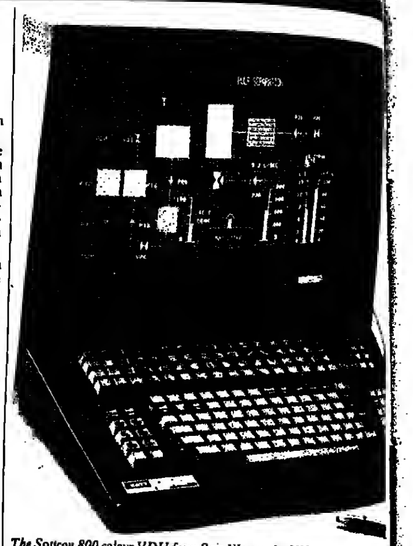
**Calcomp Ltd (CW), Cory House, The Ring, Bracknell, Berks RG12 1ER. Tel: Bracknell (0344) 50211.**

## IDS-80 raster station

THE GST-8250 raster graphic workstation from Gerber is now available on the company's IDS-80 CAD/CAM system.

Gerber claims that the workstation, which incorporates an independent HP1000E computer with 256 Kbytes of high performance memory, offers significant improvements in multi-workstation performance over the more conventional systems. These distributed processing techniques are also claimed to permit fast screen update rates.

**Gerber Systems Technology Inc (CW), Clive House, 12-18 Queens Road, Weybridge, Surrey KT13 9XD. Tel: (0932) 55951.**



*The Soltron 800 colour VDU from Salt Electronics UK.*

## Colour display system

THE Sattcon 800 from Satt Electronics is a colour display system aimed at a wide range of process control applications where comprehensive dynamic monitoring is required by the operator.

Designed to be used with Satt's Midi, Maxi and Jumbo programmable logic control systems, the system gives both general and detailed information, shows trends and analyses, statistical operating data, and so forth.

Applications include any industries where complex process control is undertaken, involving fluids handling operations, including the dairy industry, brewing and distilling, chemical engineering and similar handling operations.

The display is built up both statically and dynamically online, using the unit's microcomputer controlled keyboard. Cursor positioning is controlled from the keyboard, as is the choice of function for characters, symbols, and choice of background and foreground colours to be used. Designed for ease of use, the cursor can also be moved by using a light pen.

Apart from the VDU and main keyboard, the system also has the facility for a double flexible disc unit for picture storage, and a subsidiary operator's keyboard for changing process control parameters while the system is running. Two key locks are built into this to give a three-level priority process system.

**Satt Electronics (UK) Ltd, Unit E, 13 Holder Road, Aldershot, Hants, GU12 4RH. Tel: 0252 331651/2.**

## Telephone typesetting

THE Typeshare package aims to provide real time typesetting over the telephone.

It was developed and is marketed by the company of the same name, which says it is the only system that will put the subscriber in full control of the end result and that can automatically provide a facsimile of the setting within six minutes.

The package includes an intelligent multi-functional terminal, a compact keyboard, and an "instant" computer-linked facsimile feature, says Typeshare.

**Typeshare Ltd (CW), 42 Gloucester Crescent, London NW1 7DL. Tel: 01-352 8384.**

*THE CT 5000 is a free-standing combined punch and reader unit with electronic interfaces and controls allowing 5, 6 or 8 unit tapes to be read at switchable baud rates up to 2,400 baud, while 5, 6 or 8 unit tapes can be punched at switchable baud rates up to 300 baud. These allow simultaneous independent operation of punch and reader.*

***RGR Electronics Ltd (CW), Hillbrow Road, Liss, Hants GU33 7LE. Tel: Liss (073 082) 4125.***

## Remote devices seem local

DATATRAK has started deliveries of its Procon II protocol convertor.

Conceived originally for use with hand-held terminals, it provides for auto answer and disconnection of modems, and error control, making remote terminals appear as local devices to host machines.

Procon II is a low-cost asynchronous device which can interface directly to any computer capable of supporting teletype protocol, says Datatrak.

The unit includes internal fuse, disconnection devices for the protection of modems, and its firmware is designed to ensure line disconnection and prevent accidental or deliberate "domination" of data input facilities.

Facilities for Telxon one-way and two-way data communications are provided as input protocols. Teletype and 2741 are provided as output.

The unit is also available as a self-powered OEM "black box" comprising two UARTs, 1802 CPU, four Kbytes of ROM, four Kbytes of CMOS RAM with battery back-up.

Procon II is part of a modular system including tape and disc spooling stores, call logging printers and synchronous adaptors. Input protocols for competitive terminals will shortly be announced.

**Datatrak Ltd (CW), Computer Centre, Gayton, Northampton NN7 3EU. Tel: (0604) 858011.**

## Boss for small business

WITH hardware and software designed for a full range of small business applications, the Boss microcomputer is the latest addition to Olympia's office equipment range.

The range will also appeal to experienced, larger companies needing data processing facilities at the user point, says Olympia. There is the facility to communicate with mainframe computers and other computer systems, and the systems have been designed to be simple to understand and operate.

The microcomputers have 64K of RAM and choice of external storage capacity, and all use the Z80A processor chip. Three of the systems use twin, high density mini-floppy disc drives with a storage capacity ranging from 140 to 600 Kbytes per disc. The larger capacity 5 Mbyte system uses one mini-Winchester hard disc drive and one 600K mini-floppy disc.

Three printers are already available – 80 and 132 column dot matrix printers plus Olympia's Whisperdisc daisywheel for word processing. A full qwerty and Ascii upper and lower case keyboard, with a numeric pad is provided. There are 10 programmable function keys plus five cursor keys.

The display screen is a 12in CRT monitor, green on black which can be inversed by program. It provides the extra large capacity of 28 lines of 80 characters (2,240 characters total) which is virtually the size of a complete A4 page. High resolution graphics are also provided. The screen is flicker free and has a brightness control.

Software packages available include sales ledger and purchase ledger, stock control, invoicing and payroll and there are also word processing packages to improve typists' productivity.

Prices start at less than £3,000 for a 280 Kbyte computer with printer.

**Olympia Business Machines & Co Ltd (CW), Market Department – Computer Systems, Olympia House, 199-205 Old Marylebone Road, London NW1 5QS. Telephone: 01-262 6788.**

*The Olympia Boss microcomputer is designed to be easy to operate.*

## Shugart doubles storage capacity

TWO half-height, eight-inch floppy disc drives that are said to allow users to double existing storage capacity by placing two units in the space of one standard model, have been introduced by Shugart Associates.

The SA810 (single-sided) and SA860 (double-sided) drives, exactly half the height of standard eight-inch floppies, are fully compatible with Shugart's industry-standard SA801/851 series.

The new drives offer unformatted storage capacity of up to 1.6 Mbytes in the double-density SA860, track-to-track access time of three milliseconds – twice as fast as standard eight-inch floppies – and average access time of 89 milliseconds.

Two new electrical functions, true ready and buffered seek, are offered on the SA810/860. Together they are claimed to eliminate the need for motor start, seek, and seek complete timers, allowing the system to operate at peak efficiency.

Priced at $385 and $450 respectively in quantities of 500 units, the SA810 and SA860 will be available in the first half of 1982.

**Shugart Associates (CW), 475 Oakmead Parkway, Sunnyvale CA 94086. Tel: (408) 7330100.**

## Telex message entry system

A HIGH-SPEED OCR system for telex message entry that is claimed to be less than half the cost of other available systems has been developed by Mitsui Computers.

Called Telereader, the system, which utilises Mitsui's latest desktop OCR machine, the TO-5000, and its CR-3000 message entry intelligent display terminal, costs about £10,000.

Messages for telex transmission are fed into the TO-5000, which scans at 300 chps, and from there they appear on the screen of the CR-3000 for editing and verification before transmission.

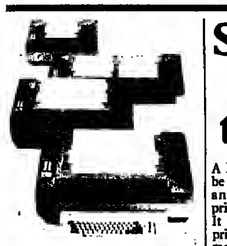
**Mitsui Computers (CW), Oakcroft Road, Chessington, Surrey KT9 1SA. Tel: 01-397 5111.**

*The Lyme 6000 from Gresham Lion.*

## Eight-colour display

LATEST visual display terminal from Gresham Lion, the Lyme 6000, features a high resolution 14-inch colour screen providing an eight colour display. It is supported with a selection of software options, including alternate character sets, colour graphics packages and full compatibility with other terminals.

**Gresham Lion (CW), Gresham House, Twickenham Road, Feltham, Middlesex. Tel: 01-894 5511.**



*The range of terminals from Peripheral Hardware.*

## Versatile range of terminals

A RANGE of high performance matrix printer terminals from Peripheral Hardware comprises three machines: the series PH 1000, 2000 and 4000 from which eight different versions can be derived to meet a variety of applications.

The features will permit any of the machines to operate either as a hard copy printer (RO version) or as a printer-terminal with keyboard (KSR version), while for graphic representation a printer plotter is available.

The series 1000 and 2000 machines have printing speeds of 150 chps and 200 chps respectively but higher speeds of 165 chps up to 280 chps (with software or electronic switchable alternatives) are available on the series 4000.

A very high resolution of the matrix permits printing in correspondence quality at a speed of 85chps switchable to 170chps. Proportionally spaced printing is also available as an option.

**Peripheral Hardware Ltd (CW), Armfield Close, East Molesey, Surrey. Tel. 01-941 4806.**

## Solid-state printing technique

A DESK-TOP printer claimed to be totally silent when on standby and almost inaudible when printing, is announced by Philips. It employs a new solid-state printing technique based on the momentary heating of tiny resistors, which means that the only moving part required is the platen that advances the heat-sensitive paper.

The Philips Copy 80 printer is a microcomputer-controlled line printer intended primarily as a high-speed hard-copy device for visual display terminals.

The machine may also be connected directly to a private telex exchange as a receive-only terminal, or via a modem to a telephone line for use in news rooms and elsewhere.

The machine's printing width of 80 characters per line and printing speed of 240 lines/minute mean that a 25-line screenful of information can be printed out in just over six seconds.

**Philips Elektronikindustrier AB (CW), S-175 88 Järfälla, Swedeo. Telephone: +46 758 10000. Telex: 115 05 PEAB S.**

*The Philips Copy 80 printer.*

## Memory up, cost down

NEW memory boards for Microfin Systems' portable data capture terminals significantly increase the memory size while substantially reducing the cost, says the company.

The maximum EPROM memory size has been increased from 8K to 32K and the maximum CMOS RAM memory size from 16K to 32K.

The new memory boards have enabled Microfin to reduce the overall cost of its portable data capture systems by between 10% and 20%.

The larger memory size adds further flexibility to the Microfin portable data capture systems by increasing the range of applications. These now include applications where large information files need to be contained in the terminal before further data is collected.

**Microflo Systems (CW), Winslade House, Egham Hill, Egham, Surrey, TW20 0AZ. Telephone: (0784) 37674.**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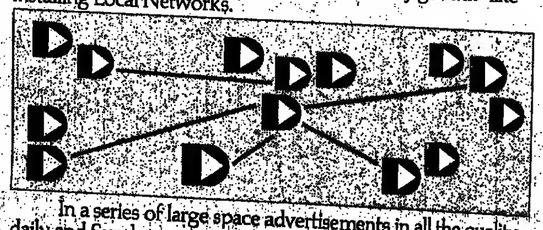

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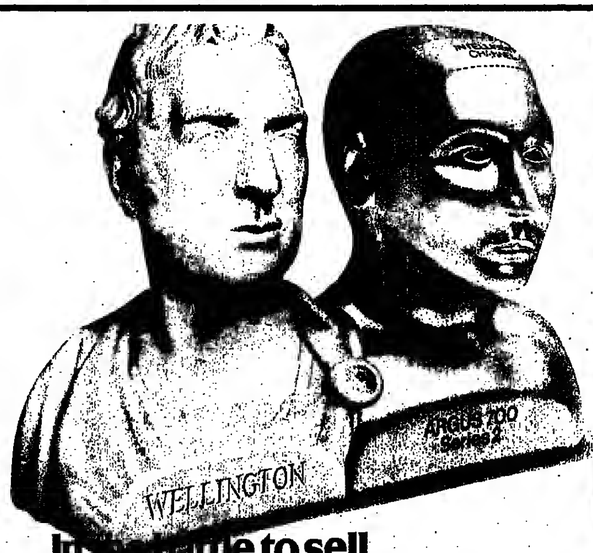


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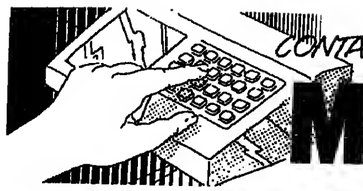

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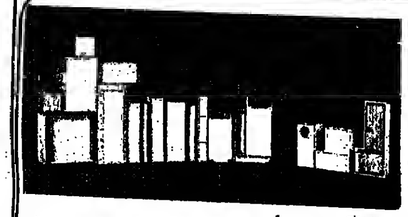

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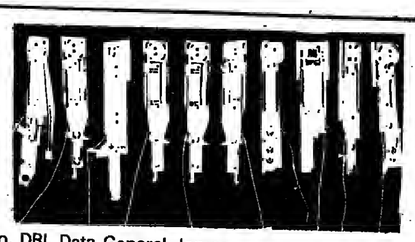

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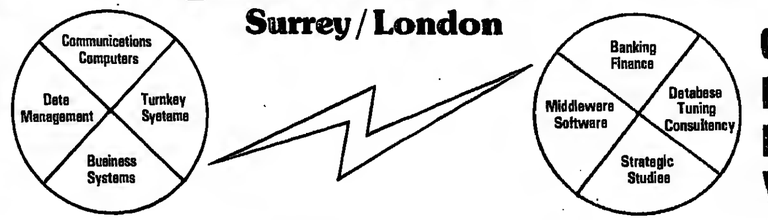


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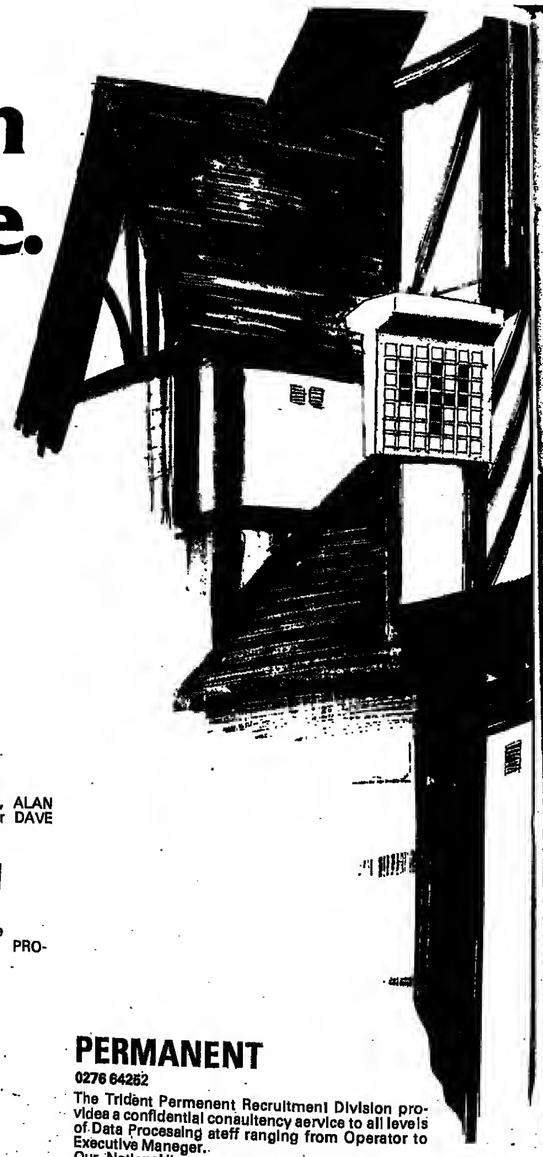

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Application with a curriculum vitae should be sent to the Personnel Officer (Technical), (C.S.), University College London, Gower Street, London WC1E 6BT.

(8437)

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**£8,000 - £12,000**
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**Please contact Mike Hessian:- 021 236 2929 (24 hrs) to discuss these vacancies, Ref H47/01.**

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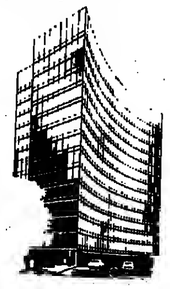

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## £14,000 to £18,000

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Closing date for applications: 4th March 1982.

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## Engineer/Programmer

£5,064-£7,137

We are seeking a graduate engineer with experience in computer programming to work on CAD and related projects. A working knowledge of FORTRAN is essential and some experience or training in traffic engineering/highway design would be an advantage. Maidstone based with flexible working hours in operation. Starting salary will depend on experience. Application form returnable by 26 February from the County Surveyor, Sandling Block, Springfield, Maidstone (Ref. PO683). (SAE please.)

KENT COUNTY COUNCIL

## Travicom

require microprocessor development staff to work on their multi-access reservation system. Applicants should have an active interest in microprocessor software, and hardware and be able to work on their own initiative. Travicom systems use Z80 microprocessors.

| | |
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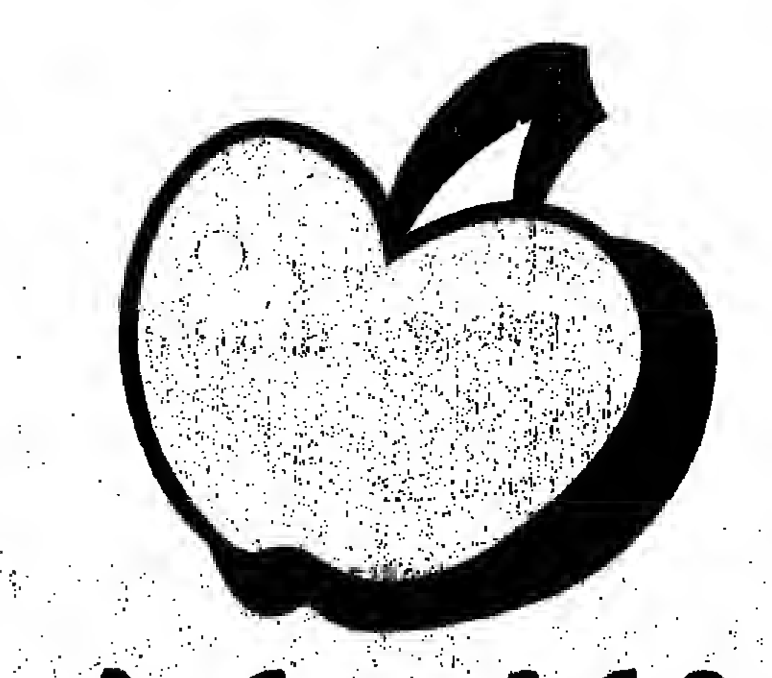
| PROGRAMMERS/ SENIOR PROGRAMMERS | to £9,500 |
| TEAM LEADER | to £11,500 |

Location: Ascot/Maidenhead area.

Apply with CV to Personnel Manager, 13 Hermitage Parade, High Street, Ascot, Berks SL5 7HE. (8447)



## A plum job?

Bell Fruit U.K. Ltd., a major national operator of gaming equipment based at Pewsey, Wiltshire require a

**Data Control Supervisor**

Bell Fruit use two IBM 5280 micro systems to process machine income and stock control and the new position will involve working on the development of new systems.

The successful applicant will have sound knowledge of Data Control and ideally experience of mini or micro systems.

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To find out more ring Kay Stebbings on 01-836 8411 (reverse charges accepted).

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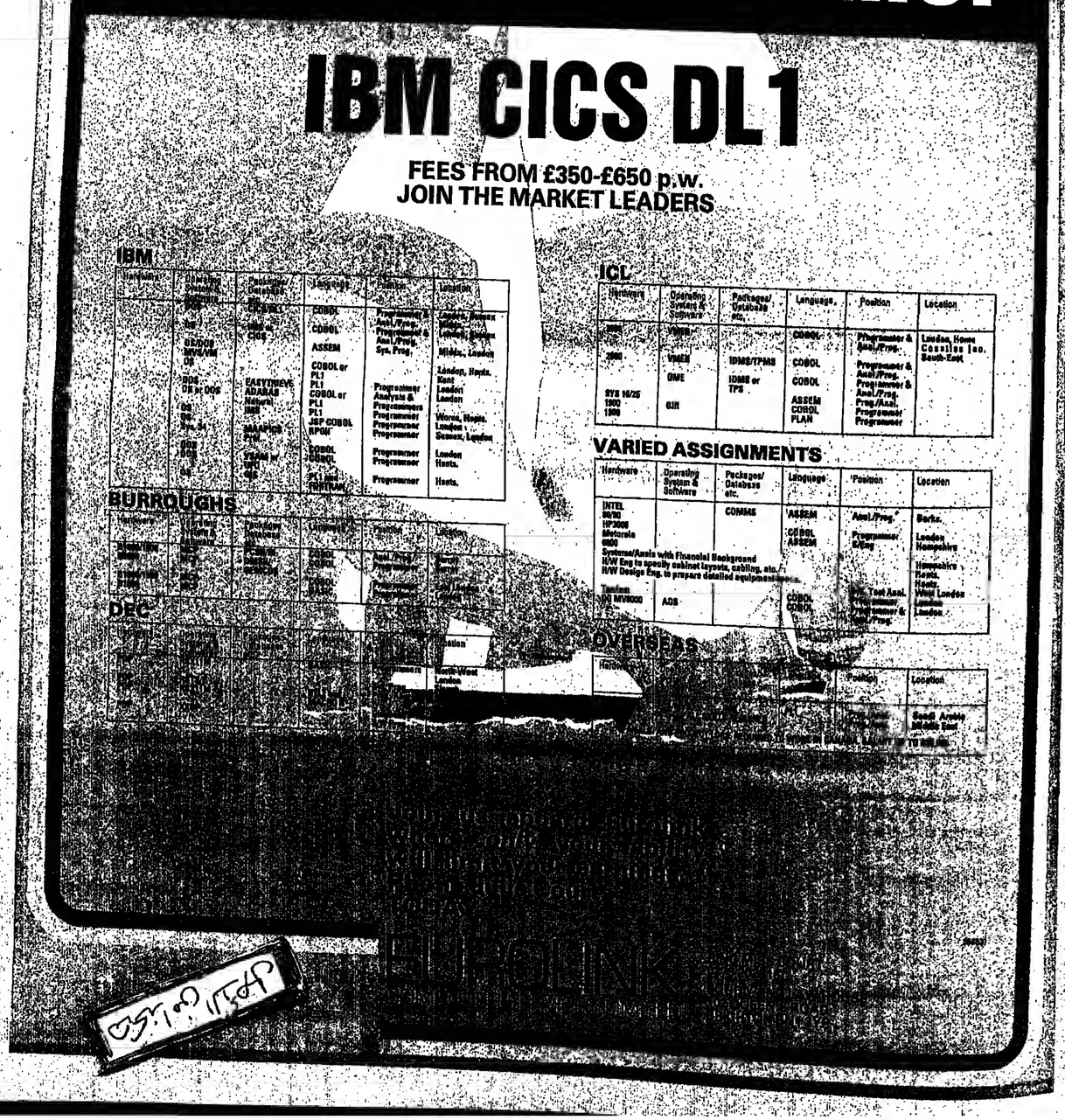


Apply in confidence

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# Integrated Circuit Design Automation

Texas Instruments is a dynamic international company working at the heart of the micro-electronics revolution and is constantly expanding its activities. One of our key growth areas is the automation of integrated circuit design and to support this activity we will shortly be commissioning an IBM 4341 installation which will be running MVS and TSO.

Against this background, we now need to recruit the following Systems/Software professionals for our Design Automation Department in Bedford.

### Installation System Manager

To ensure the efficient use of the new machine and be responsible for user training and consultancy activities and the supervision of every aspect of its day-to-day operation. You should have experience of IBM operating systems, preferably including MVS and possibly gained in a technical research and development role. Good communications skills will be essential.

### Senior Software Engineer

We are also looking for a Senior Software Engineer with experience of CAD-type programs (e.g. in support of integrated circuit design and development) to assume responsibility for one of our DA project areas. Design automation tools include logic and schematic simulators, compilers and layout geometric and schematic verification tools implemented in FORTRAN and PASCAL.

Both positions carry a competitive financial package, exceptional career progression opportunities and relocation expenses where appropriate.

Men or women should contact Jane Sparrow for an application form on Bedford (0234) 223442 or write to the Personnel Department, Texas Instruments Limited, Menton Lane, Bedford MK41 7PA.

TEXAS INSTRUMENTS LIMITED
*...where people and technology meet*

(9421)

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# KUWAIT

Our client is a highly successful distributor for two major international organisations and has established a large base of prestigious users in Kuwait and now wishes to make the following appointment.

## MAINTENANCE ENGINEER
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# Cobol Programmer

### Boost your career prospects in a high technology industry

The National Nuclear Corporation continues to make increasing use of computers and computing methods in all aspects of its business.

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A vacancy exists in our COBOL programming team based initially at Risley, but with relocation to Knutsford, Cheshire in 1983.

The successful candidate will have at least two years' COBOL experience on DEC or IBM equipment, be qualified to degree level and will not be less than 22 years old. Essential requirements will be self motivation, ability to work with minimum supervision and be capable of completing projects to time scale.

The Company will offer a competitive salary to the right person. In approved cases, the Company will offer an attractive relocation package including agent and legal fees. There are the usual large company benefits including contributory pension and life assurance scheme plus contributory private medical assurance scheme.

Why not make the right move now?

Write or telephone for an application form quoting reference No. RO28/CW to:

Mr. K. A. Sykes,
National Nuclear Corporation Limited,
Warrington Road, Risley,
Warrington, Cheshire, WA3 6BZ.
Tel: Warrington (0925) 51291 ext. 404/288.

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**UNIVERSITY OF NEWCASTLE UPON TYNE**
**DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING**
**RESEARCH ASSOCIATES**

## VLSI Design Methodology

Applications are invited for four temporary Research Associate posts for a major research project in VLSI Design Methodology funded by the SERC and jointly managed by the Electrical and Electronic Engineering Department and the Computing Laboratory. The grant includes the provision of a VAX 11/780 computer with advanced colour graphics terminals to work on second generation computer aided design tools for very complex integrated circuits.

The posts available include support for systems software and communications, circuit layout aids, simulation and verification of digital systems as well as data base and special purpose language research.

Candidates should have a graduate qualification or equivalent in computer science or electrical engineering and have experience in the development of software using PASCAL or a similar high level language.

Two posts are available for 48 months and two posts for 42 months. Starting salary will be up to £8,680 per annum on the Range 1A scale, £6,070-£10,675 per annum, according to age qualifications and experience.

Applicants should send a curriculum vitae and the names and addresses of three referees to Professor D. J. Kinniment, Department of Electrical and Electronic Engineering, The Merz Laboratories, The University of Newcastle upon Tyne NE1 7RU, from whom, further particulars can be obtained.

The closing date for receipt of applications is 15th February 1982.

---

## CANADA

A major company in the petrochemical industry in Calgary is seeking experienced Programmers, Analysts and Computer Personnel of all levels.

Experience with IBM computers would be preferred but not essential.

Please send comprehensive résumé to Angela S. Gibbons.

RODERIC UNGER and PARTNERS LTD.
11 High Street
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(8404)

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# SYSTEMS ANALYST

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Our clients are a go-ahead, innovative British organisation (part of a large Group) with factories in the UK and branches throughout the world. The products incorporate the latest developments in electronics, optics, lasers and precision mechanical engineering. Over 80% of production is exported.

A wide range of new projects is planned, and hardware is being upgraded to IBM 4341. To handle this spectrum of varied, interesting new developments, we seek a Systems Analyst who understands and is interested in production applications.

You should have upwards of two years' systems analysis experience in a manufacturing environment, or be able to demonstrate an awareness of manufacturing applications. A programming background, although useful, is not essential.

In addition to an attractive starting salary, our clients offer a comprehensive employment package, including Company pension scheme, annual bonus, season ticket loan and flexible hours.

***Please ring us for a confidential discussion, write briefly, or leave a message on our answering machine after hours, quoting reference 711.***

(8451)

**EDP SYSTEMS** 01.637 5796
52-53 Margaret St. London W1N 7FF

# MICROSYSTEMS '82

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"High quality of visitors and enquiries. Will certainly attend in 1982! Ohio Scientific (UK) Ltd.

"... a very successful exhibition!" Micro Scope Ltd.

"Successful introduction of latest low complexity colour display." Microvitek Ltd./Bradford Council.

"Ninety-five quality enquiries." Seno Systems Ltd.

"The show was great – it surprised us the first time – it was even better in 1981. The quality of enquiries and visitors asking searching questions was excellent and, better still, they spent big money! Yes, it works!" Anadex Ltd.

MICROSYSTEMS'82

# 6,308

## QUALITY VISITORS

**The facts speak for themselves**

Attendance: 6,308.
Over 2 years,
this represents a 65% increase.

**Over 40% of visitors were Directors and Senior Management, and other roles represented were:**

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Programmers
Senior Engineers
Chief Planners – Local Government and Government
Operations Managers
Development Engineers
O & M Officers
Design Engineers
Consultants
Lecturers
Project Leaders
Research Managers
Surveyors
Systems Support Managers
Technical Engineers
Chief Engineers
Physicists
Senior Electronic Designers
Senior Software Specialists
Programme Analysts
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**The formula is right – the correct balance of USERS – SPECIFIERS – and the people who control their company's expenditure.**

MICROSYSTEMS'82

**Let it work for you!**
February 24-26, 1982
West Centre Hotel

MICROSYSTEMS'82

**Where product launches get maximum coverage!**

Over 20 exhibitors launched new products or services at Microsystems '81, and these were seen not just by the 6,308 top quality business visitors to the show, but also generated huge interest amongst the press who attended.

Extensive PR coverage before the event ensured the attendance of over 80 journalists. Both UK and overseas publications were represented and among the media who visited were:

BBC Radio 4; BBC TV, Granada Technical Books, Electronic Engineering, Computable (Holland), The Sunday Times, OEM Design, The Economist, Personal Computer World, Electronic Engineering Times, Electronic Times, Process Engineering, Databus (Holland) and Microsystems (France).

## OVERSEAS INTEREST!

**As well as achieving considerable note from overseas publications, Microsystems '81 was visited by an impressive number of overseas business visitors from 37 countries:**

Australia, Austria, Belgium, Canada, Cyprus, Czechoslovakia, Denmark, Egypt, Eire, Finland, France, West Germany, Greece, Holland, Hong Kong, Hungary, Israel, Italy, Kenya, Lebanon, Malta, New Zealand, Norway, Sultanate of Oman, Pakistan, Philippines, Portugal, South Africa, Saudi Arabia, Spain, Sweden, Switzerland, Turkey, USA, Yemen, Yugoslavia.

At Microsystems – the overseas business potential comes to you!

## – AND THE UK MARKET TOO!

**The big UK-based users and buyers of equipment and services exhibited at Microsystems were there in force, all of them prospective clients – and from organisations such as:**

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## Software Support
**W. M'sex £12,500 + car**
**C. London £14,000**

Take this opportunity to join one of the most successful computer companies of our time. You will need several years technical software experience to include: real time, data communications and/or database systems. Analysts with banking or financial systems experience would also be of interest. You cannot fail to be impressed by this client.

## PDP 11/34 Software
**Hants £8.5K - £11.5K**

If you would like to join a successful and substantial International company offering a range of software opportunities with managers who care about your career, this is for you. Projects include real time industrial control systems, basic software R&D, computerised instrumentation, etc. You must know RSX11, CORAL and Macro-11. Attractive company benefits, generous relocation.

## Programmer Analyst
**C. London £7K to £10K**

Our client is the Minicomputer Business Systems group within a large International financial organisation. An additional programmer/analyst is required to work on the development of packages for a range of equipment including PDP11, Wang 2200 and IBM 5120. Candidates must be degree level. COBOL/BASIC essential, DIBOL very useful. Attractive company benefits.

## Systems Evaluation
**W. Herts. £10K - 12K**

Candidates are required for two new positions created within the development group of this expanding computer manufacturer. You will have a software background with reasonable knowledge of hardware. Your task will be the technical verification of complete systems for performance to design specifications. You will need the competence to derive and prove your own benchmarks.

## Programme Manager
**Surrey to £13K + car**

Programme management is a staff function which operates across multi-discipline management lines to ensure the timely development and release of products within budget and marketing constraints. Candidates need to have a software and hardware background with development experience covering micros, W.P. comms. & O.S. They should be competent in planning and estimating with a firm but tactful manner.

## Progs. to Team Leaders
**W. Country £8K to £12K**

This is an excellent ground floor opportunity for a range of good software people to join a new team being specially formed to develop an advanced micro based, office system product. Your background should be in systems software plus comms. and local area networks. You will work in an advanced block structured language. Reloc. where necessary.

## Message Switch
**London c. £9,500**

An International bank with advanced message switch and communications systems based on DEC PDP 11/34 and 11/70 equipment, is seeking an additional programmer to work in their communications group. Candidates will require RSX11/Macro-11 experience and preferably a knowledge of data communications. Superb working conditions. Attractive benefits: Low interest loans and mortgage, free restaurant, etc.

## Project Manager
**Berks. c. £12K + car**

You will be responsible for the latest stage in the development of a multi-site message switching system. Computer centres in several major cities are already in operation. Candidates will liaise with sales, development, vendors and official agencies in negotiating product implementation and installation. Some pre and post sales support is involved. Telecommunications experience is essential.

## Networking Software
**Beds/Herts. £10K-13K+**

You will be an experienced data comms. person, probably with a background in bisync. protocols. In more recent times you will have been involved in X25 projects and be up-to-date on recent developments in networking. Tasks vary from internal consultancy to team leader responsibility for design and implementation. Positions are with expanding engineering development groups.

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We would like to meet candidates with several years software experience who are interested in joining the special systems group of an International computer manufacturing company. Your tasks will be evaluating operational requirements and technical analysis on non-standard product content in system proposals. You will be part of a small team working closely with sales.

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SCOTTISH HEALTH SERVICE
COMMON SERVICES AGENCY
COMPUTER CENTRE

## Intermediate Systems Designers
Ref. No. U407

## Basic Systems Designer
Ref. No. U408

Vacancies exist at the Agency's new computer centre for the above staff to help convert existing systems and design new ones for a recently installed I.C.L. 2966. Data Dictionary and the use of Database software is being planned together with communications and micro systems.

Candidates for the intermediate posts will be expected to have two or three years' relevant postgraduate experience or have had equivalent training. Basic System Designers should be graduates with at least one year's computer experience in programming or systems. In all cases candidates must demonstrate good communications skills both oral and literate.

Salary Scales Ref. No. U407 A & C Scale 9 — £7,554 to £9,277 p.a. and
Ref. No. U408 A & C Scale 4 — £5,684 to £8,147 per annum

Application form and further details can be obtained from the Appointments Section, Common Services Agency, Trinity Park House, South Trinity Road, Edinburgh EH5 3SE. Completed applications should be returned by 24th February, 1982. Please quote appropriate reference number.

(8462)

St. Thomas' Hospital
London SE1 7EH

## Temporary Computer Programmer in EEG

**Salary Scale £5,978-£7,543 inclusive**

To work on a monthly contract to write the software required in interfacing departmental EEG equipment with PDP.11-34 and Apple systems. Previous PDP.11-34 experience essential. Previous signal analysis expertise an advantage.

**For further details telephone the EEG Department on 01-928 9292 Ext. 2186 or for a job description and application form telephone the Personnel Department on Ext. 2822.**

(8471)

## BOX NUMBERS

Box number replies should be addressed to:
Box Number......
c/o Computer Weekly
Quadrant House
The Quadrant
Sutton, Surrey SM2 5AS



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| PROGRAMMERS | SOUTH COAST | IBM COBOL OS/MVS |
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| PROGRAMMERS | LONDON | IBM Series 1 EDX Engineering Applications |

TLP

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(8478)



Bristol Polytechnic
**Computer Centre**

The Polytechnic has a large and rapidly expanding multi-discipline user base. To provide the necessary service to this base the Computer Centre is about to take delivery of two Prime 850s which will add to its present equipment as the next phase of its plan to provide 180+ simultaneous terminal ports. Applications are invited for the following Computer Centre posts to assist in this development.

**Senior Programmer**
*Grade AP5* – Salary £7,371-£7,878 per annum – Ref A/110
To support the Department of Engineering and Department of Construction and Environmental Health primarily at the Ashley Down site.

**Senior Programmer**
*Grade AP5* – Salary £7,371-£7,878 per annum – Ref A/109
To support the Computer Centre nucleus at the Frenchay Site.

**Senior Programmer**
Grade AP4 – Salary £6,501-£7,137 per annum – Ref A/111
To support the Department of Graphic Design and the Computer Centre nucleus between the Bower Ashton and Frenchay sites.

**Part-time Senior Programmer**
Grade AP4 – Salary pro rata to £6,501-£7,137 per annum – Ref A/112
To support the Department of Town and Country Planning, primarily at the St Matthias site.

For further details and application forms, to be returned by 22 February 1982, please contact the Personnel Office, Bristol Polytechnic, Coldharbour Lane, Frenchay, Bristol, or ring Bristol 656261 Ext 216 or 217.

Please quote appropriate Reference Numbers in all communications.

(8481)

UNIVERSITY OF ESSEX

## Senior Lecturer/Reader, Lecturer and Two Temporary Lecturers in the Department of Computer Science

Applications are invited for four posts in the Department of Computer Science. Two permanent posts and two temporary lectureships, each for a period of two years. The appointments will be from 1 October, 1982. Salary Scales: Senior Lecturer (£12,305-£15,410) Lecturers (£6,070-£12,860).

Suitably qualified applicants from any branch of Computer Science will be considered but priority will be given to applicants who are experienced in one or more of the following areas:

- Artificial Intelligence
- Data base systems
- Distributed systems
- High level languages — their design and implementation
- Microprocessor applications

For the Senior Lectureship/Readership, we are seeking a person with a well proven record of research who can clearly demonstrate continuing and active research preferably in one of the areas above.

Applications (nine copies), including a curriculum vitae and the names and addresses of three referees, should reach the Registrar (quoting AG/133/* for the Senior Lectureship or AG/134/* for the Lectureships) University of Essex, Wivenhoe Park, Colchester CO4 3SQ, from whom further particulars may be obtained, by 5 March, 1982.

(8425)

# 100,000

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ComputerWeekly

100,324 ABC Jan.-June 1981



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*£12 000 – £16 000 plus bonus*

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Minimum 5 years DP including 2 years Systems Analysis. The position is managerial and the promotion prospects are excellent.

### Software Programmers
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### Experience
Minimum 3 years in on-line environment. Knowledge of some of: – OS/JCL, OS/VSI, ASSEMBLER, COBOL, CMS, VTAM, VSAM. Prospects excellent.

### Assembler Programmer
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### Experience
3 years. Knowledge of 370 Assembler. Preference given to people with knowledge of VTAM/CICS. Prospects excellent.

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Excellent relocation allowances
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Study loan facilities
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For the more senior positions a company car and expenses and the use of company holiday flats in Durban and Cape Town.

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| | |
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| Senior Software Programmers | IBM, MVS, CICS |
| Senior Project Leaders | Engineering, scientific financial or banking applications |
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| Analyst Programmers | Financial or banking applications |
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## Systems Application Specialists
## Senior Software Controller

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### Systems Applications Specialists

These positions require all-round DP Professionals to provide a complete pre-and post-sales support service of Optical Character Recognition equipment.

Responsibilities will include: –
Application investigation
Paper flow analysis
Installation planning
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Demonstration and Presentation
Customer Training

Full product training will be given in the USA.

### Senior Software Controller

This position requires a DP professional who has had at least ten years experience in the application of standard commercial, production and financial packages.

The job is to control the acquisition and verification of software packages for Datapoint sales and support. This will entail liaison with sales staff, customers and international software houses and will involve travel within the Republic and internationally

### Fringe Benefits

Fringe benefits include relocation and settling-in allowance together with all the benefits associated with a modern and internationally recognised 'Blue Chip' organisation.

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## PROGRAMMERS

**BEDFORDSHIRE**

**Up to £8,500 plus bonus**

We require several Programmers with at least one year's experience in

★ **ICL SYSTEM TEN/25**

All successful applicants will demonstrate that they have the potential to develop their own skills and must be able to work with the minimum of supervision whilst providing assistance to other staff.

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**PICK UP THE TELEPHONE NOW**

Contact either: Alan Jephcote or Bill Brett, Lloyds Bank House, 39 High Street Biggleswade, Beds. Telephone (0767) 316286

(8189)

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Computer Systems and Consultancy

## PROGRAMMER

Freelance or full time for Pet and Superbrain.

Mainly stock control and order processing.

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UNIVAC 1100 SYS. PROG. (NOW)
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VM, MVS, CICS, IMS SYS. PROGS. (MAR/APRIL)
DOS/VSE ASSEMBLER (NOW)

**MONTREAL ASSOCIATES SYSTEMS**

01-553 2944 (4 lines) EMP Agy.

## COMPUTER PROGRAMMER

We are looking for an experienced programmer to join a small team involved in the use of a dual ICL 2976 mainframe computer and supporting minicomputers to maintain and develop systems which include: Accountancy, Information Retrieval, Planned Maintenance, Resources Management, Stores Data Processing

The task will involve responsibility for analysing users' requirements and providing advice and guidance, for assisting in the formulation of computer services policy and for training programming staff.

Winfrith is a major R&D Laboratory of the United Kingdom Atomic Energy Authority with considerable experience in the usage and development of complex computer codes for its scientific and engineering programme. The post advertised is to strengthen the non-scientific applications work at Winfrith and applicants should therefore have at least two years' direct experience of applying computer systems to commercial and technical work and to have a good background knowledge of ICL COBOL.

Initial appointment will be to a grade with a starting salary in the range £4,355 to £5,845 p.a. Applicants with relevant experience may, however, be eligible for a starting salary higher in the scale, which rises to a maximum of £7,755 pa. Good promotion opportunities exist for advancement to the next grade with a salary of £7,980-£9,830 pa. In addition, the Authority provides an attractive package of benefits including an excellent contributory superannuation scheme.

Applications to: United Kingdom Atomic Energy Authority, Personnel Department 'B', AEE, Winfrith, Dorchester, DORSET, Quoting reference No. W.B. 354. Closing date for applications: 12th March, 1982.

(8469)

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SALES BIT

# Find the people who influence the decisions

IN my recent article on the difference between the "actual" and the "assumed" decision-maker in the company hierarchy, I pointed out that the person at the top of the company pyramid is an essential contact when any major sale is being made but not necessarily the one who will make the final decision.

There is another idiosyncratic element of the decision-making process that can also be overlooked: the unofficial company organisation that exists within the official one. In many companies and institutions, there can be an interaction between individuals and/or groups of people that is more powerful than the official "family tree."

The larger the organisation, the more likely this is. It can be a subtle trap for the unwary salesman who does not realise that the organisation chart the managing director was so happy to give him is more of a camouflage than a selling aid.

The salespeople most affected by these hidden forces are those involved in products which, by their very nature (usually high capital value), imply a substantial period between initial contact and the final decision.

Without doubt, the best way to penetrate the hidden organisation is from beneath. In some cases, middle management may know who calls the tune; in others the answer may best be found on the shop floor.

One of the most common forms of hidden influence on the decision-making process is the introspective pressure group, whose primary interest lies not with what is best for the company at large, but for its own limited sphere of influence.

For example, a company is deciding upon a computer both to process accounts and handle production. Probably the computer that was initially installed some years ago was for accounting purposes only, and consequently was controlled by the chief accountant, as were subsequent machines that also catered for production needs.

The production department feels like a poor relation and believes that its requirements are always given bottom priority when, in reality, they should have top. So this time they are determined it will be different. They have had a long time to think about it.

What will they do? There is little chance of them taking over control of the existing computer operation; so their only real alternative is to secure independent processing facilities. They create practical justification and fully utilise all lines of political influence to rally support for their cause.

Good timing is essential so they are most likely to play their cards towards the end of the selling cycle.

Meanwhile, back at the top of the company pyramid, the salesman believes he is competing with a couple or three mainframe manufacturers for a centralised distributed processing system whereas, in reality, he is also unknowingly competing with a number of minicomputer manufacturers for part of what may be a two-system solution.

He is unwittingly fighting the organisation within the organisation and, depending upon its strength, may be proposing a solution without alternatives that may ultimately become politically untenable.

The salesman who anticipates this will identify all pressure groups, take their insular needs into account and propose alternative solutions that keep him in the running no matter what the ultimate outcome of the various power groups and political lobbying.

There are lots of other hidden factors that are not declared within the official company structure.

The "lightweight general," for example: On paper, he may be top of the heap, but the people who really make the decisions for his rubber stamp approval are his lieutenants. More often than not, the influence will stem from one person who, in turn, will have friends and allies within the organisation who are likely to get preference.

Then, there are the "shooting stars." These are the up-and-coming wonder boys who exist in many companies, already earmarked for stardom. Such people may have relatively low status in the context of the organisational chart, but very often that assistant production manager could also be the chairman's favourite grandson. Ignore him at your peril!

Sometimes, a company will have an informal reorganisation to divert business activity around an individual who officially, has a fairly senior position. This is usually due to his incompetence or that he is politically unclean. The salesman must have a real understanding of how much clout each senior executive really has.

There are often managers working "under the influence." This person does whatever a particular individual says, or is subservient to a particular lobby. Sources of powerful influence are often outside the scope of the formal pyramid.

Then there are favourites. Chief executives, usually of low competence, have people for whom they have strong personal liking and whom they allow to cloud their judgment. That a particular decision is outside their sphere of competence or authority appears to be of no consequence. They state a preference and it is firmly taken into account.

No organisation is what it appears to be and it is the salesman's job to discover the reality of the organisation and sources of unstated influence that are certain to exist in most companies.

*Alan Williams*

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